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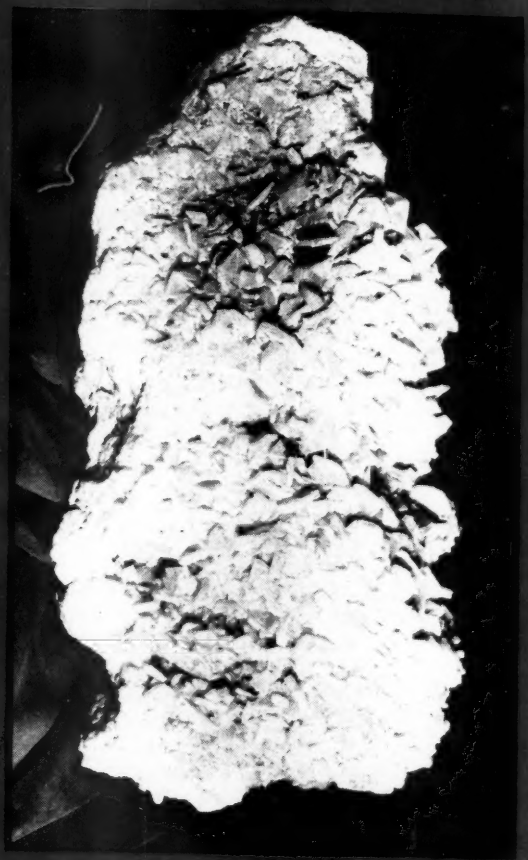

A most unusual celestite found 4 miles N. E. of Zephyr, Texas, by T. R. Havins, of Brownwood, Texas. See p. 300 for a description of it.

60c

JULY - AUGUST, 1954

WHOLE NUMBER 241

58th LIST OF FINE MINERALS

ANTLERITE, Chuquicamata. Xlline. on and in rock. 3½x2½x1½	$ 3.00
ZIRCON, N. Carolina. ⅜" xls. in rock. 2x1½	1.50
CHALCOPYRITE, French Creek, Pa. Xld. mass. 3x2½x1½	3.50
TOURMALINE, Franklin, N. J. 1½" brown xl.	1.50
AXINITE, France. Mass of xls., no rock. 3x2x1. Very good.	6.00
BARITE, Derbyshire. Section of brown stalactite, polished. 1½x¼	1.50
CHONDRODITE, Tilly Foster. Small gemmy xls. on matrix. 2x1	2.50
PYROMORPHITE, Phoenixville, Pa. Well xld. mass, no rock. 2x1½x1	3.50
SPINEL, Madagascar. ¾" loose greenish xl.	1.50
SPHENE (TITANITE), Switzerland. Xld. w. Adularia on rock. 2½x1¾ ...	2.50
CHALCOPYRITE, Cornwall. Botryoidal mass, "Blister Copper". 2½x2	2.50
WILLEMITE v. TROOSTITE, Franklin. 1" xl. in Calcite. 2½x2	2.00
AMETHYST, Delaware Co., Pa. Xld., fine color, not cuttable. 3x2x1¾ ...	3.50
TOPAZ, Mexico. Flattened xls. on rock, not cuttable. 2x2x1½	2.50
GROSSULARITE, Vilui River. Greenish-yellow mass of small xls. 2¼x2x1 ..	3.00
DARAPSKITE & KROEHNKITE, Chuquicamata. Intimate mixture, xlline. 2½x2	2.00
BREWSTERITE, Scotland. Well xld. in cavernous matrix. 3½x2½x1½ ...	3.00
COPPER in CALCITE xls., Michigan. Smallish xls. in rock. 3x2x2	3.50
ANGLESITE, Sardinia. Good xls. in cavity of Galena. 2½x2x1½	3.50
TENNANTITE. Cornwall. Mammillary w. xld. surface. 3½x2	5.00
SMALTITE, Bieber, Germany. Xlline. & partly xld. in Siderite. 2x1½	2.00
AUTUNITE, Philadelphia, Pa. Scales on rock 3x2	1.50
WAVELLITE, Bohemia. White radiated masses showing xl. terminations on surface, in rock. 3x1x2	3.00
MANGANITE, Ilfeld, Harz. Mass of xls., some terminated. 2½x2x1½	3.50
CHALCOCITE, Bristol, Conn. Well xld. mass. 1½x1. No rock.	2.50
BOURNONITE, Casapalca, Peru. In small xls. on Quartz xls. 4x3x2	3.50
STILBITE, Italy. Salmon-red radiating masses in rock. 3x2	2.00
ERYTHRITE. Cobalt, Ont. Xlline. crusts on rock. 3x2½x1½	2.00
LINARITE, Soda Mts., Calif. Minutely xld. & xlline. on matrix. 2½x2¼ ..	2.50
PHOSGENITE, Sardinia. Excellent loose xl. 1x¾".	15.00
RUTILE, Graves Mt., Georgia. 2x1¾x1¼ brilliant loose xl. (4 oz.)	6.00
APATITE v. FRANCOLITE, Cornwall. Xld. on rock. 4½x2½x1½	3.50
RUTILE, Pylesville, Maryland. Small xls. in Chloritic rock. 3x2x1½	2.00
ALMANDITE, Salida, Col. Large (2¼") xl., bright faces. (1 lb. 2 oz.) ..	3.00
LIMONITE, Fleetwood, Pa. Mass with iridescent surface. 4x3½x2	2.00
SIDERITE pseudo. by incrustation after xls. of BARITE from the Virtuous Lady Mine, Devonshire. Group of xls. "Lady Slippers" 4¼x3	3.50
THOMSENOLITE, Greenland. Minutely xld. w. Cryolite. etc. 2½x1½	2.50
BORNITE, Prospect Park, N. J. Xlline mass w. some rock. 3x2x1¼	2.50
TOURMALINE, Franklin, N. J. 1" greenish xl. in Calcite. 2½x2	2.00
TOPAZ, Devil's Head, Colo. Reddish xl. w. etched faces. 1¼x1¼. Good. ..	12.50
ARAGONITE, Cumberland. Group of tapering translucent xls. 3x1¼	2.00
CONNELLITE, Cornwall. Xlline. radiating on rock 2x1½	6.00
SCHALLERITE, Franklin. Xlline. w. Fowlerite on ore. 2½x1	3.00
CHALCOCITE, Franklin, N. J. Xlline. mass. 2½x2¼. Rare from Franklin. ..	2.50
RAMMELSBERGITE, Cobalt, Ont. Polished section of vein. 3x2¼	5.00
JAROSITE, Pioche, Nevada. Micro. xld. on rock. 4x2½	3.00
SPODUMENE, Newry. Maine. Translucent greenish xlline. mass. 4x3x1 ...	2.50
APATITE, Maine. Four small lilac xls. in rock. 3x2x2	5.00

HUGH A. FORD

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No list furnished, but inquiries for specific minerals welcomed.

ROCKS and MINERALS

PETER ZODAC, Editor and Publisher

America's Oldest and Most Versatile Magazine for the Mineralogist, Geologist, Lapidary.

Published Bi-Monthly

OFFICIAL JOURNAL

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WHOLE NO. 241 VOL. 29, NO. 7 - 8 JULY - AUGUST, 1954

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CHIPS FROM THE QUARRY

COMING EVENTS

Orange Belt Mineralogical Society 8th Annual Gem and Mineral Show, San Bernardino, Calif., Sept. 25, 26, 1954.

Eastern Federation Convention, Oct. 12, 13, 14, 15, 1954, Miami, Fla. (Executive Vice President in charge of Convention, Henry B. Graves, 3163 N. W. 27th St., Miami 42, Fla.).

Dealer congratulates R & M

Editor R & M:

We thought you might like to know that our ads in your magazine bring far greater results than any of the other magazines we advertise in. In fact our ads in ROCKS AND MINERALS bring more results than our ads in all of the other magazines put together. Your magazine is definitely the leader in its field for advertising results, quality of articles, and educational value.

One of the reasons your magazine far exceeds others in advertising power is, we believe, because your advertising policy is far more fair than the other magazines. By this we mean, you do not compete with your advertisers. All other magazines in this field run ads in competition with its advertisers. This of course is unheard of in other magazines fields. In fact the assistant editor of one mineral magazine is usually at Mineral and Gem Shows with a commercial booth selling in direct competitions with his advertisers.

A California dealer.

June 3, 1954

(Editor's Note: As much as we would like to print the name of the writer of the above much-appreciated letter, we must respect the wish of the writer to remain anonymous).

Arkansas well advertised

House of Crystals, Rt. 1, Box 282, Hot Springs National Park, Ark., uses a letterhead which meets with our warm approval. The letterhead is illustrated with a map showing the location of many of Arkansas mineral localities (diamond, lead, silver, rock crystal, gypsum, barite, and other mines); roads with their route numbers are also shown. The location of House of Crystals also appears on the map. A very good letterhead. We wish other dealers would adopt something similar.

Oldtimers' Mineral Club

One of the many active mineral clubs in the country is the Oldtimer's Mineral Club whose membership is made up of men and women over 50 years of age and who reside all over the country. The club issues the "Mineral Bulletin" which has a wide circulation and costs only $1 a year; its editor is Paul VanderEike, R2, Box 1168, Vista, Calif.

In the "doghouse" so must redeem himself!

Editor R & M:

We have, in our home, an unhappy crisis which must be relieved! Our March-April 1954 Copy of ROCKS AND MINERALS is missing! I am the guilty party. I gave it to a friend (Mr. James Greer of Greensboro, N. C.) who seemed quite pleased and interested. I hope he becomes a subscriber.

However, I must do something to redeem myself and be re-admitted into the family circle. We read R & M from cover to cover and then bind it for future reference. Therefore I am writing for a replacement copy and while I am at it I would like to acquire all copies for 1949 and the first three copies of 1950. Therefore I enclose a check for six dollars as payment for them.

James B. Irvine
Wayland Road, R. D. #1
Collegeville, Pa.

June 2, 1954

Whole family enjoys minerals!

Editor R & M:

Enclosed you will find our renewal subscription for ROCKS AND MINERALS. Tho for some time previous to the beginning of our subscription, we had been interested mildly in minerals, it was actually from the time we began to receive your magazine that we really learned a tremendous amount about the hobby the entire family now enjoys. Actually it was our 10 year old daughter, Barbara, who pushed the issue in the beginning, and who now is quite, shall we say, a "pebble pup."

We shall always be obliged to Dr. James H. Benn, Exhibits Preparator Department of Geology at the Smithsonian Institution in Washington, D. C., for suggesting your publication to us. We have found it to be every bit as he recommended. We all look forward for each issue.

We also wish to thank you for introducing the Novice Column. Our daughter, one of the first entrants, received some excellent specimens. She is especially happy over the many really nice specimens sent to her by Mr. C. E. Golden of Easton, Pa.

Don C. Ippolito
1004 School Village
Seabrook, N. J.

May 12, 1954

THE WALNUT HILL SPODUMENE LEDGE NEAR SOUTH WORTHINGTON, MASSACHUSETTS

By B. M. SHAUB
159 Elm Street, Northampton, Mass.

The Walnut Hill pegmatite which has produced a number of large well-formed spodumene crystals during the last century is located in the northwest corner of the town of Huntington. The ledge in which the quarry has been excavated is located near the crest of Walnut Hill on the south side as shown by the crossed hammers, Fig. 1. The quarry is accessible by following the road northeast from South Worthington for about three-quarters of a mile, and then an old road, indicated by a dotted line on Fig. 1, to the south and southeast to the crest of Walnut Hill. The road is not passable to cars for the entire distance throughout the year. Although the road ends at the top of the hill, the stone walls along the sides of the of the road continue down the east slope toward the Westfield River. A line, south 17° west, magnetic, from a point 400 feet along the continuation of the road beyond the summit of Walnut Hill will bring one to the south crest of the hill and close to the quarry. The woods are open and the quarry can easily be located.

One may also reach the quarry from the south by ascending the small brook which enters Little River at a point two-tenths of a mile north of the junction of the old road along Little River with the present highway, route No. 112. This junction is 1½ miles south of the Worthington-Huntington town line. The small brook empties into Little River at a point near the site of an old sawmill on the west side of route 112. The walk up the broad valley is easy and through open woods. One should avoid following the main branch of the brook which comes in from the west.

A brief historical sketch of the ledge and its early minerals.—The presence of cleavelandite, spodumene, beryl and other minerals of the sodium-lithium-rich pegmatite in the town of Norwich (later named Huntington) was known in the early part of the 19th century. Hitchcock (1) makes mention of minerals from this locality in his report on the geology of Massachusetts published in 1833. When the first quarrying operations were started could not be determined although a search was made of the scientific literature and the town histories. It is not unlikely that the early operations consisted of little more than a very limited amount of work in order to obtain mineral specimens for study purposes and for cabinets and possibly to obtain a supply of spodumene for its lithium content. The Walnut Hill pegmatite, as stated by Julien (2) became "celebrated for its remarkable crystals of spodumene", Fig. 2, which were the first to yield information regarding the crystallography of this mineral. Likewise the first good crystals of triphylite to be discovered were obtained at this locality. The quarry appears to have been operated for the last time in 1885 when Professor B. K. Emerson of Amherst College (3) reopened it with the assistance of Frank L. Nason. At that time a crystal of spodumene measuring 3 1/2 x 7 1/2 x 28 inches long was obtained although it was not well terminated. Many of the smaller crystals of spodumene now in the mineral collections from this locality show well developed terminations.

General geology of the area.—The rock in which the spodumene ledge is inclosed is the Conway schist. The schistosity of this formation strikes in a north-south magnetic direction and dips to the west from 65 to 90 degrees. At places where the Conway schist is exposed in outcrops or where it has been excavated in road cuts and other engineering operations there are at times a number of interesting minerals exposed, some of which are likely to be in good crystals. One or more of the following minerals may be expected where the fresh rock has been exposed: biotite, garnet, staurolite, zoisite, quartz, feldspar, kyanite, rutile, calcite, aragonite,

diopside, actinolite, siderite and ankerite.

Into this rock many dikes of the Williamsburg granite magma and the later soda-lithium-rich fractions of the same magma have been injected. There is consequently a wide variation in the texture and mineral content of the dike. A considerable number of these are simple injected dike-like phases of the granite while others are coarse-grained and are to be classed as pegmatites. The late differentiates of the magma have produced the pegmatites rich in sodium and lithium and which contain the many rare and interesting minerals found in the area. The presence of abundant cleavelandite, the bladed variety of albite, at once sets the late pegmatite dikes apart from the more frequent and fine-grained variety.

Description of the pegmatite.—The Walnut Hill spodumene ledge is a rather irregular intrusive body having a number of roof pendants of the Conway schist. It may also exist in part as several closely spaced parallel dikes or as a single dike containing large inclusions of the country rock. Its greatest width appears to be about 50 feet including the various rock inclusions. Its true width along the outcrop is quite variable and difficult to ascertain on account of the loose rock and other debris scattered over the outcrops and quarry areas. The mass of the

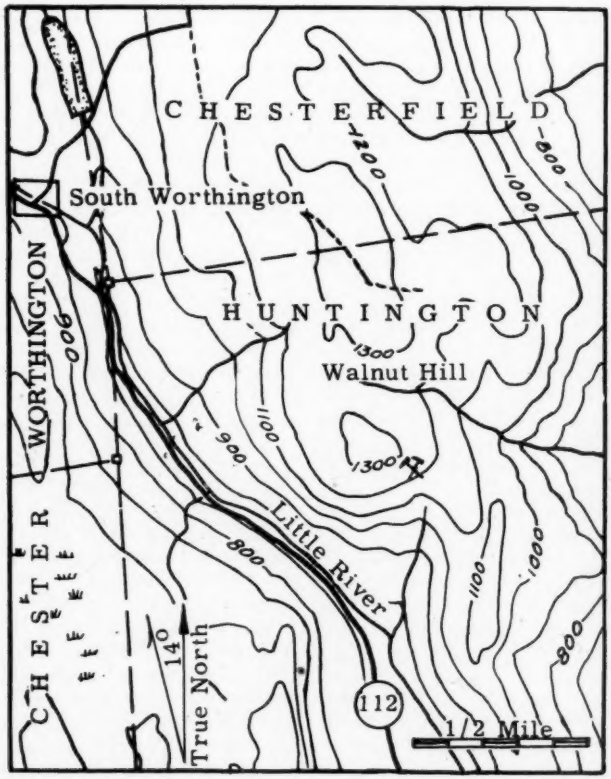

Fig. 1.—Map showing the location of the Walnut Hill spodumene ledge. Drawing is from parts of the Chester and Westhampton quadrangles of the U. S. Geological Survey.

pegmatite consists largely of a very compact cleavelandite in blades up to 3 or 4 inches long which indicates that the magma was probably relatively dry. This mineral, together with some microcline and quartz, begins at the contact with the schist and continues toward the interior of the dike where the central part becomes rich in quartz inclosing the spodumene, together with an increase in the rarer minerals although these appear to be distributed in small amounts throughout the cleavelandite. Due to the massive form of the cleavelandite there are scarcely any of the polyhedral cavities between the cleavelandite blades in which one often finds excellent small crystals of the rarer minerals.

The dikes of the area were under considerable differential stress after the magma was essentially solidified. The results of the stresses are evident in the crystals of spodumene and other minerals. In the spodumene one often finds many shear-bends, in one direction, along their lengths. Some of the spodumene crystals are severely bent and often broken into numerous pieces. Tourmaline, a relatively brittle mineral, shows the effects of the stresses and movements, within the nearly consolidated magma, by its numerous fractures and en echelon offset sections of the crystals which were later cemented by quartz and other late minerals which were then present in solution in minor amounts.

As in many spodumene-rich pegmatites the terminated spodumene crystals are inclosed in quartz in the central part of the dikes. The material crystallized here represents the last fraction of the original magma to solidfy. The process is con-

Fig. 2.—A photograph of one of the many good spodumene crystals obtained by Professor B. K. Emerson and others at Walnut Hill. The label on the specimen bears the note "Huntington 1885". Specimen now in the Amherst College Museum. X=about ½.

tinuous from the wall to the center of the pegmatite. There is no evidence of a late reopening to receive late supplies of quartz-spodumene-rich magmatic solutions. Near the end of the crystallization period the last part of the solution became much richer in quartz and spodumene by the removal of cleavelandite, microcline and the other earlier minerals through their solidification. During the solidification of the solutions in the central part of the dikes the prismatic spodumene crystals grew toward the center of the dike, or in any case, away from the minerals to which they were attached. The terminated crystals grew into the still unconsolidated pegmatite solutions which consisted largely of quartz which finally crystallized around the spodumene crystals thereby preserving their terminations. This central quartz-spodumene zone was called a "secondary vein" by the early geologists. It is present in several of the spodumene-bearing pegmatites of the area.

Along with cleavelandite one finds quartz, muscovite, perthite, and a dark blue tourmaline which appears to be black in reflected light. Broken crystals of tourmaline 6 to 8 inches across were observed. Much of the tourmaline on the dumps has been broken down into small pieces. Along the schist walls the pegmatite is finer-grained without any appreciable concentration of any particular mineral species; however, pieces of the pegmatite on the dumps show many parallel tourmaline crystals which indicate some separation of the tourmaline in zones or streaks.

The minor associated minerals found on the dumps are garnet, apatite (fluorescent), beryl, columbite, lithiophilite, triphylite, zircon and a few small grains of a mineral having a pitchy luster. Among the alteration products found were heterosite as pseudomorphs after triphylite, pyrolusite dendrites, autunite and kaolinite. Most of the spodumene fragments on the dump were relatively fresh and did not show the so-called "cymatolite" alteration product that has been described from the quarry.

In reviewing the situation with regard to the constitution of this pegmatite, one might well suspect that deeper within the pegmatite, *if it is of a greater width*, the accumulation of residual water may have provided the necessary environment for the development of larger crystals of all of the late minerals as well as providing cavities which could possibly yield excellent tourmaline, beryl and spodumene crystals as well as the other late minerals to crystallize.

The quarry and dumps.—The quarrying operations at this locality were never extensive. The limited amount of work here is indicated by the small size of the several openings and the present size of the dumps. One of the chief objects of the operations was to secure spodumene. Consequently this mineral has been cobbed and removed from the enclosing pegmatite rock; nevertheless, small pieces are still available by digging in the dumps. On a recent visit one of the party secured a beryl crystal about 3 by 8 inches with very poor terminations. Samples of all of the minerals described above were found on the dumps in a couple of hours by a party of four.

The pegmatite is covered at the north end of the quarry by the schist, but it outcrops again several hundred feet along the strike to the north at the top of the hill. The same dike continues for a thousand feet to the north but in this distance it varies greatly in the coarseness of the mineral grains and in its mineral composition; much of the material appears to be a coarse-grained granite.

The previous work has not exposed enough of the pegmatite for one to evaluate its possibilities. The outcrops of the dikes in the area are abundant but nearly all are phases of the Williamsburg granite and do not contain concentrations of the lithium or other rare minerals. Nevertheless, such may exist as segregations, but they would be difficult and costly to locate.

To the student of mineralogy and lithology, a visit to this old, well-known

and historic locality is worth the trip although he probably will return without a pack of choice specimens.

ACKNOWLEDGEMENTS

The writer wishes to express his thanks to Dr. George W. Bain of the Department of Geology, Amherst College for permission to photograph a few of the Walnut Hill specimens now in the college collection.

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(2) Julien, Alexis A., "On Spodumene and its Alterations, from Granite Veins in Hampshire County, Mass.", Annals N. Y. Acad. Sci., Vol. 1, p. 352, 1879.

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COLLECTING IN PATAGONIA

By WALTER J. EYERDAM
7531-19th Ave., N. E.
Seattle 5, Wash.

In July 1938 as member of the University of California second botanical expedition to the Andes I was sent with five other botanists to South America to collect all kinds of botanical specimens, seeds, fruits and especially to search for certain missing links of tobacco species with viable seeds necessary for carrying on elaborate crossbreeding to improve commercial tobaccos (Nicotiana) to improve flavor, and quality. This quest for the necessary species and ultimate discovery of the three desired missing links with viable seeds caused me to travel over 20,000 miles on the ground and on water in 12 of the Latin American countries.

Three months were spent in the Gran Chaco searching for the rare and peculiar *Nicotiana otophora* which my partner Dr. Alan Beetle and I finally found in flower and with plenty of viable seed in a botanically unexplored region. This was a tall wide leaved tobacco which grows about ten feet high.

Our next assignment was to find a very necessary tobacco called *Nicotiana acaulis*. It was known from only a single specimen found by the Italian botanist Spegazzini in 1898 in a obscure area of S. E. Patagonia in a region called Monte Leon or Lion Mountain.

In Buenos Aires we bought a Ford pick-up truck at the assembling factory and fitted it out for our purpose with provisions and blankets and sleeping bags. We also took along a young Argentine botanist who proved a valuable assistant and companion in making proper contact with various people. We collected every kind of plant of all classes that we could find along the entire route, both in the interior and along the Atlantic coast of Patagonia.

Nicotiana acaulis is a very small tobacco only ½ inch above the ground. I knew it only from the small photograph of Spegazzini's dried specimen. We drove down to Monte Leon and explored the region along the Strait of Magellan; drove northwest from Punta Arenas and explored all of the shores of the big lakes, drove along the eastern slope of the Andes for 1200 miles often straddling the deep ruts made by the huge 10 foot high wheeled wool carretas for hundreds of miles. We crossed Patagonia five times and drove a thousand miles along the Chubut river from mouth to source looking for the tiny tobacco. The sheep ranches are so big in Patagonia that we usually drove at least 100 miles between farms. One sheep ranch, owned by a Basque that we explored for plants, was 4½ million acres.

At last we were in N. W. Patagonia and had not found any trace of the object of our quest. After intensive search nearly ten thousand miles of travel in this vast empty country we decided to redouble our efforts. As I had worked in a brewery for many years I was interested to meet Herr Schroeder of Pilsen, Bohemia, who had a small brewery

at the small town of San Martin in the territory of the Tehuelches. He was known by all of the gauchos and the sheep men as producing the best flavored beer in Argentina. Moreover he had the unrivaled reputation of having won the beer drinking championship about 35 years before, of Germany and Bohemia. He had a diploma to show that he had drank the incredible quantity of 45 liters of beer in one hour. I spent the morning with him and altho an old man of past 70 he still seemed vigorous and healthy. Less than half an hour after we left the brewery I suddenly halted our truck as we came to the bank of a small river when I spotted a large patch of the much desired *Nicotiana acaulis* which had given us the jitters for weeks and nearly started growing new genes in our brains. This locality was nearly 3000 Km. N.W. of the spot where Spegazzini had found his specimens. We collected about 50 sheets of this plant in flower and in seed. The taproots of this tiny plant were from one to three feet long.

Patagonia is a bleak, cold and very windy region composed of largely of Pleistocene gravel and sand with numerous small mountain ranges of granite and andesite and metamorphic rocks. So far, there has been very little of minerals found. The rich mineralized gold country lies across the Strait of Magellan in Tierra del Fuego and adjacent islands. There are numerous small salt lakes or Laguna Secos and in some bleak desert areas are hills of terra cotta with a great variety of pastel colors which someday could sustain a substantial paint industry.

I was always on the lookout for minerals having prospected for many years, but found none here. Along the Chubut river i n Central Patagonia we passed for hours thru the Paso de Indios in the territory of the Tehuelches between towering cliffs almost like our Grand Canyon but not so deep. This is a region of much geological interest because of the great stratified cliffs and rocks of many hues. Wind erosion has carved countless holes and caves and queer shaped figures. It is a barren region of little fertility. In leaving this interesting canyon we went thru the Paso de Martires where we found some very interesting crystals some of them larger than a man's fist. These are chalcedony pseudomorphs after aragonite group — translucent reddish brown About 40 Km. South of Cajon Ginebra Chico on a clay hill I found many bone fragments and teeth of a large extinct mammal, possibly a Mylodon. There were no invertebrate fossils in this place.

When we started out on the Patagonian excursion near the mouth of the Rio de la Plata I dug about a square foot piece of the heavy armour plate of a fossil Glyptodon out of sandstone bedrock. This was the type locality of one of these giant armadillos which was half the size of an elephant when full grown, and grew to the length of fifteen feet.

Fine specimens of colored petrified wood and chalcedony were frequently found in Central Patagonia. I sometimes found flint and jasper arrowheads and also one fine specimen of a bolas ball of black granite. Nowadays the Lolas balls are made of lead. As our journey thru the Andes after disposing of the truck did not allow the weight of a lot of rocks I kept only a few of the best specimens. A few others were collected in Chile and Bolivia later on.

I spent three months more in Bolivia collecting plants and on one excursion I was the guest of the British vice consul at his newly opened old Spanish silver mines of Misque for a week. I brought home about 100 pounds of ore samples and minerals from these old diggings. When I have them all named I can submit a short account of this interesting excursion.

Stones end man's loneliness

Alvin Lett, 71-year old Prattville, Mich., great-grandfather, is one of the most active mineral collectors in Michigan. A widower since 1945, Mr. Lett's 5 children, 13 grandchildren, and 2 great-grandchildren, live so far from Prattville that frequent visits are impractical. To end his loneliness, he started collecting minerals 3 years ago and now his collection numbers among the thousands. He is also an amateur lapidary. The Jackson (Mich.) CITIZEN PATRIOT in its issue of Jan. 14, 1954, printed an interesting item about Mr. Lett and his minerals illustrated with 2 photos.

Some Mineral Localities In Central Dickinson County, Michigan

BY WALDEN P. PRATT[2]

1 Publication authorized by the Director, U. S. Geological Survey.

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Introduction

Late in the summer of 1949 the writer visited several mineral localities in the central part of Dickinson County, in the upper Peninsula of Michigan. Although these localities offer few exceptionally fine cabinet specimens, they do offer a fairly good variety of minerals for the collector. This article resulted in part from observations made in connection with a comprehensive study of the iron-bearing districts of Michigan being conducted by the U. S. Geological Survey in cooperation with the Geological Survey Division of the Michigan Department of Conservation.

This article was written in the fall of 1950, when the writer was last in the area. Since then, several minerals new to these localities have been noted by Dave Archie of Iron Mountain, an enthusiastic collector whose finds have been made known to the writer by H. L. James of the U. S. Geological Survey.

General Geology

The geologic history of Dickinson County, necessarily generalized and simplified, is as follows: During early Proterozoic time (about one and a half billons years ago) granites intruded a country rock that is now represented chiefly by isolated patches of amphibolite. A long period of erosion followed, which reduced the surface to a peneplain. Upon this foundation was deposited, in Huronian time, a series of sediments that were later metamorphosed; they are now represented chiefly by the Sturgeon quartzite, the Randville dolomite, the Vulcan iron-formation, the Michigamme slate, and various interbedded slates and schists. Pegmatite and diabase dikes and more granite were emplaced during another period of intrusion, about 900 million years ago, that followed the deposition of the sediments. Intense structural deformation of most of the area has resulted in a complexity of faults and folds. Toward the end of the Proterozoic era the surface was again beveled and the structures truncated by erosion, and the resulting peneplain was covered with sediments deposited by the encroaching Cambrian sea, roughly 500 million years ago. All that remains of the cover of Cambrian rocks in this area is a sandstone capping on some of the ridges. Within the last million years, glaciers covered the area with a mantle of sand and gravel. Except for ridges and knobs of the more resistant rocks, chiefly quartzite and granite, most of the area is now buried under glacial deposits that are in most places between 25 and 50 feet thick but may be as thick as 300 feet.

The geologic structure of the area may, in general, be described as a group of eastward-trending troughs of Huronian metasedimentary rocks, separated by rims of igneous rocks, chiefly granite and granite gneiss.

Commercial Interests

The Menominee iron range of southern Dickinson County has been a major producer of iron ore since the first shipment was made in 1873. Iron ore has also been mined in the lesser known Calumet and Felch troughs, and a renewed interest in the possibility of production of low-grade ore from these areas has prompted current explorations.

Granite pegmatite, amphibolite, and dolomite are quarried in the Felch trough and are crushed for use as terrazo, an ornamental building material. Some high-grade dolomite is used in the making of cosmetics.

Mineral Localities

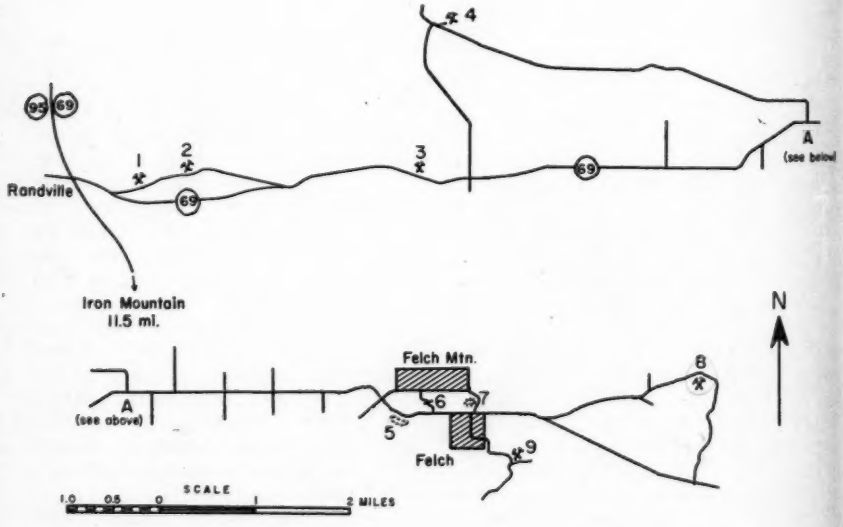
The mineral localities discussed here are, with one exception, in the Felch trough. Although good sulfide and carbonate specimens have come from mines in the nearby Menominee range, few of those mines are now in operation and

little of interest is to be found on the dumps, except occasional specimens of micromount quality.

The collector will best start from the cities of Iron Mountain, Crystal Falls, L'Anse, or Ishpeming. Though not essential, it will be helpful to have a road map of Dickinson County, available at a small cost from the office of the Dickinson County Road Commission in Iron Mountain. Proceed to route M-95, and follow this highway to a crossroads named Randville. At this intersection turn east on route M-69, a well-graded gravel road. At about 0.4 mile, another gravel road forks to the left. Proceed along this road for about a quarter of a mile, at which point a pair of ruts leading to the left marks the entrance to the Superior Rock Co. quarry (No. 1 on map of localities).

This quarry is cut in the Randville dolomite; a few large tunnels extend horizontally into the rock from the floors of the open cuts. Since the quarry is no longer in operation, little is to be obtained here other than an idea of the lithology of the dolomite, and a hint of the minerals to be found farther east. The rock is a white to gray, moderately to coarsely crystalline dolomite. Metamorphism has transformed siliceous impurities into small blades of pale grayish to greenish tremolite, which are found in concentrations that mark the original bedding of the sediment. The tremolite is more resistant to weathering than the dolomite; as a result, weathered surfaces of the rock are characterized by small ribs and knobs, which protrude as much as an inch and present striking evidence of the local compositional variations of the rock. The rock also contains small amounts of diopside and sulfides.

Returning now to the road, turn east again and proceed about 0.5 mile, to where a large crushing mill on the left indicates the Newkirk quarry (No. 2). This quarry is also in the Randville dolomite. The material exposed is quite simi-



LOCALITIES IN CENTRAL DICKINSON COUNTY, MICHIGAN

lar to that in the first quarry, but the tremolite and other silicates appear "cleaner." The dolomite is cut by a granite dike, which is exposed on the south side of the quarry.

Continue east about a mile, and thus back onto route M-69; from here proceed east about 1.5 mile. A clearing to the north of the road and a dirt road leading up a steep hill mark the entrance to the Groveland mine (No. 3). This large open pit, cut into the Vulcan iron-formation, is an interesting sight but is not open to the public. According to H. L. James (written communication), the adjacent dumps contain very nice hematite as coarse blades (specularite) up to an inch long in dense magnetite, and grunerite as pale brown or tan layers interbedded with magnetite.

Half a mile east of the Groveland mine the highway intersects a north-south road. Turn north and continue 1.9 mile, crossing the West Branch of the Sturgeon River, to another junction. Turn east here and proceed 0.2 mile to a little-used road leading off to the left. This road extends 0.1 mile to a small quarry that has been opened in a pegmatite dike (No. 4); the dike has been intruded into the body of granite that forms the northern rim of the Felch trough. The rock is a pegmatitic red granite, colored gray in places by abundant plates of muscovite.

Beryl occurs very sparsely as small crystals, usually in larger masses of quartz. It is a dirty yellowish-green variety fractured in places. One crystal collected by the writer was embedded in quartz and measured approximately 4 by ¾ inches. The specimens are not of outstanding quality, but they represent the rarer of the pegmatite minerals found in this vicinity.

Columbite-tantalite has been collected by Dave Archie, who found a coal-black specimen about 3 inches long with some crystal faces.

Feldspar, var. orange-red microcline, is the most abundant mineral in the rock. Cleavage fragments as much as a foot in diameter are fairly common. Some parts of the mineral contain intergrown quartz, making attractive specimens of pink graphic granite. A plagioclase of deeper red color than the microcline is reported by H. L. James (written communication) to be fairly abundant adjacent to the quartz core of the pegmatite.

Garnet crystals are fairly common and are usually associated with quartz. They are deep red in color; no attempt has been made to identify the species. The crystals are small, reaching a maximum of about half an inch in diameter (rare). The predominant crystallographic form is the trapezohedron.

Muscovite is fairly common in books as much as 3 inches in diameter and several inches thick. Occasionally a group of plates may be found arranged in radiating "sunburst" form.

Quartz is next to feldspar in abundance, the two constituting about 90 percent of the rock. It is common, glassy massive quartz. Though it does not occur in good crystal specimens itself, the collector should note that the accessory minerals — the beryl and garnet — are concentrated in the masses of quartz.

A good technique in collecting specimens here is to look around the dumps for a large chunk of very coarse grained feldspar and quartz, and carefully, patiently, take it apart. Don't pound hurriedly; pry gently. This quarry will not yield specimens equal in quality to those from the pegmatites of New England or the Southwest; but if you have taken the time to stop, be patient and make the most of your opportunity. Once finished with your large block—and don't forget to leave one for the next collector—hunt around among the small chips. You may find garnets exposed in the face of the quarry, but tedious engineering operations are often required to remove them; those underfoot, once found, are usually just as good and are much less reluctant to be carried away.

Leaving the quarry, retrace your tracks to route M-69, turn east, and follow the highway for 6.6 miles to an intersection. Continue slowly along the same road about 0.2 mile beyond the

intersection, keeping a sharp lookout for an old road turning off to the right. Pace along this road a distance of 500 feet, then turn right (southwest) and pace through the brush 150 feet. Or, if you cannot locate the old road, simply continue on the highway about a quarter of a mile from the intersection, and then head approximately south-southwest into the woods. In either case a hike of a few hundred feet should bring you into the midst of a number of pits in the side of the ridge (No. 5). Scout around these pits and with luck and a keen eye you will find a few specimens of a dense, gray metallic rock containing many small cavities or vugs. Many of these vugs contain small platy crystals of hematite, and small crystals of quartz that are colored reddish brown by enclosed masses of limonite. This specimens will all be small and are better material for the micromounter than for one who seeks 2 x 3 inch cabinet specimens. Most of the rocks on the dump are chiefly limonite (ocher), for which the pits were dug. If you lose your way from the path — a feat easily accomplished — strike north; the road is within a few hundred yards.

Proceed east now on route M-69 a very short distance to the first turnoff, a road curving northward over the ridge. Park on the shoulder by this turnoff and walk up the road to a point where it is cut through rock (No. 6). This rock is the Vulcan iron-formation and forms the ridge that extends east and west for a little more than a mile. The rock is fine grained and is composed of bands of iron oxide — hematite and magnetite — alternating with bands of granular quartz; specks of red jasper occur sporadically with the quartz. Veins in the rock contain quartz and specularite.

Once again on M-69, continue east to the next road to the north, which also crosses the ridge. Follow this road until it turns sharply west — about 0.4 mile from M-69 — and park just beyond the curve. Pace south across the field about 450 feet to a large dump (No. 7). This is the material discarded from an open pit in the iron-formation. The rock here is characterized by vugs lined with carbonate minerals, which present the reason for the stop.

Calcite occurs as occasional crystals of the variety dog-tooth spar.

Dolomite crystals line most of the vugs, making attractive specimens when thoroughly washed. This material does not compare with the fine pink-tinted crystals of the Tri-state district, but it is rather unusual for this part of the country.

Hematite, var. specularite, is also found in places in the rock.

Sulfides — chalcopyrite and pyrite, and perhaps marcasite — occur in the rock though not in good crystals.

The collecting at this spot seemed better on the south side of the dump at the time the writer visited it. Since the material has been exposed to the weather for some years, the best specimens probably can be found by digging into the pile.

The pits from which this material was taken lie about 400 feet to the south. They are largely filled with water, however, and are not likely to present unlimited collecting opportunities. If your search for specularite at stop No. 6 was unfruitful, you may try again by walking south to the same ridge, which is just beyond the pits. Collecting may prove better here, though it is largely a matter of chance.

Return once more to route M-69 and turn east, then proceed 0.8 mile to a fork in the road. Take the left (north) turn, leaving M-69, and go 1.8 mile to an overgrown road leading to a large dump of snow-white rock (No. 8). Park the car here and take all your empty bags along. Climb to the top of the dump — don't waste time examining it yet — and walk to the right, crossing a single-track railroad spur. Before you is an immense gaping hole that should prove the best hunting-ground of the day. It is the Metro-Nite quarry, cut into the Randville dolomite, which you examined at the first two stops. Since the quarry is active (or was in 1951), inquiry should be made before any collecting is begun. The workers have been glad to admit the writer and his colleagues in the past, and

if politely approached they will probably continue to permit collecting. As is true in any active quarry, a wait may be necessary because of blasting operations.

The feature of this quarry that will immediately strike the observer, other than its size, is a large granite dike that cuts the north and south walls. Two smaller and less conspicuous dikes are also exposed in the quarry. The metamorphism of the dolomite exposed here has been greater than to the west; the rock is generally of a cleaner appearance, and the tremolite, in particular, is more perfectly developed.

Amphibole is abundant. The most common mineral of the amphibole group represented here is tremolite. It occurs sporadically throughout the dolomite, in light green masses, asbestiform in places, and in bladed aggregates ranging from white to dark green. The best specimens by far are found closely associated with the glassy quartz. Diligent seaching may prove well worthwhile; for a few sharp, intergrown blades of nearly translucent, light-green tremolite, set in a matrix of glassy quartz that appears dark, almost bluish-gray by comparison, make a specimen that may grace any amateur's cabinet. It is practically impossible to find any terminated crystals; but the individual blades, which are usually members of closely packed clusters, may be as much as 3 inches long (though rarely) and half an inch across. Other amphiboles reported from here are actinolite (?) and feranthophyllite.

Dolomite is of course the predominant mineral. It is in general coarsely crystalline, though in places sugary-grained; the color ranges from pure white to light pink. Though the mineral does not constitute good crystal specimens, occasionally a piece may be found that contains both pink and white dolomite and pale-green massive tremolite. This is an appealing color combination even though it may not meet the qualifications of a fine cabinet specimen.

Fluorite was discovered in the granite by Dave Archie, as flesh-colored cubes lining a 4-inch vug.

Pyroxene, var. pigeonite and salite, have been reported from this quarry but have not been specifically identified by the writer. H. L. James reports (written communication) that diopside is abundant but is light-colored and not readily spotted.

Phlogopite occurs as small crystals, as much as half an inch wide near the large dike.

Quartz is present, especially near the large dike, as vitreous masses.

Scapolite, another mineral collected by Archie, occurs in coarse-grained bladed aggregates or pods adjacent to one dike; it is violet colored but otherwise resembles the tremolite.

Serpentine occurs along the borders of the large dike, a result of the contact-metamorphic action of the dike on the silicates in the dolomite.

Sulfides — pyrite, chalcopyrite, and tiny masses of galena — occur in small amounts.

Once back in your car, retrace your route as far as the intersection that marks the village of Felch, 2.6 miles back, and turn south. Cross the railroad, turn left, and follow the main road for 0.6 mile from the railroad crossing. An old road leads into the woods, and there are large piles of rock on both sides of the main road just before this turnoff. Follow the old road about 400 feet, and two quarries will come into view, one on each side (No. 9). The quarry on the right is cut in a mass of amphibolite and offers little or nothing of interest to the collector. The other — Rian's quarry — is cut chiefly in the Randville dolomite. The dolomite is exposed on the north wall, and the minerals here are much the same as at the Metro-Nite quarry, though not nearly of such fine qaulity. On the south wall are exposed dolomite and impure quartzite, and between them is a mass of a skarn rock — a product of hydrothermal action on the nearby rocks.

Diopside occurs as masses as much as 4 inches across. It is a medium-to-dark green variety; individual crystal term-

inations were not seen by the writer, but the nearly right-angle cleavages and a parting parallel to the basal pinacoid are prominent.

Hornblende occurs as lustrous, black, thin prismatic crystals as much as an inch long. To remove single crystals would be difficult, but a number of them set in a pinkish-white matrix make a beautiful specimen.

Quartz constitutes a part of the matrix in which the other minerals are set.

Wollastonite also has been reported from the quarry.

The specimens from this locality are not outstanding for beauty or perfection of form,but because the rock type is unusual, the locality should not be passed by.

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Collecting Water - Soluble Minerals In The East Tennessee Area

By Carl Honaker and Blaine Miller

Tennessee Wesleyan College, Athens, Tennessee

Introduction

Although the term "water-soluble mineral" usually conjures up a vision of arid salt beds, a surprising variety of these minerals are found in the East Tennessee - Western North Carolina area. During the Civil war, niter was obtained from caves in this area particularly from the clay on the floors of these caves. Chalcanthite ($CuSO_4.5H_20$) has been obtained from the mines at Ducktown, Tennessee. Copperas or melanterite ($FeSO_4.7H_2O$) is formed in many places due to decomposition of the Chattanooga black shale, one very notable example of this is near Manchester in Coffee county, the locality being called Copperas Cave. Epsomite ($MgSO_4.7H_2O$) and alum are also found in conjunction with copperas. Perhaps the most famous of these locations is Alum Cave, a few miles from Gatlinburg, Tennessee in the Great Smoky Mountains National Park. This tremendous "rock house" is one of the few reported locations of apjohnite ($MnAL_2(SO_4.24H_2O)$.

Three field trips will be described in which several new locations for water-soluble minerals have been found.

Lake Ocoee-Ducktown Area

One of the most profitable field trips which a budding young mineralogist can take is along the shores of Lake Ocoee from Parksville, Tennessee, to Ducktown, Tennessee and on across the mountains into Murphy, North Carolina. At Ducktown are located the copper mines where we have obtained fine sample of bornite, biotite, pyrite, staurolite, muscovite, chlorite, garnet, and tremolite, all from the dumps of the copper mines.

About three miles West of Murphy, North Carolina are talc mines. From these we have obtained specimens ranging in color from pure white to green and honey-color.

To return to the subject of water-solubles, about three miles above Parksville on the Ocoee River road, we have found specimens of epsomite. Most of the material at this site is finely powdered, although some specimens can be obtained which are attached to the matrix rock. Some distance on up the river, we found a small deposit of alunogen ($AL_2(SO_4)_3.18H_2O$). One specimen from this site is highly unusual, consisting of a perfect crystal of pyrite embedded in the alunogen.

On a second field trip into the Ducktown-Copperhill area an extremely promising locality was discovered. In a pit produced by the cave-in of an abandoned mine the following minerals were found: Pisanite, melanterite, romerite, chalcanthite, dietrichite, and selenite. The chal-

canthite and pisanite occur as stalactites of length 2 to 6 inches hanging from ledges on the pit face. The melanterite was distributed throughout the pit. The romerite was found in conjunction with two other minerals, which we have not been able to identify at the present time. The dietrichite was found in a small pocket associated with melanterite. The selenite occurs as needle-like crystals found on the pit face and also on stalactitic limonite. The ground water at this location is highly acid. This would indicate that there is a good possibility of finding various other water-soluble minerals at this location.

Fontana, North Carolina Area

On a second field trip we traveled across the Smokies from Maryville, Tennessee to Fontana, North Carolina. Most of the exposed rock surface in this area is of a type not given to producing water-soluble minerals, near Fontana, however, the nature of the rock changes, yielding a rather fruitful area for the collector. In a quarry one mile west of Fontana Village we found good specimens of kieserite ($MgSO_4.H_2O$) and eosphorite (a mangano iron aluminum phosphate).

Tellico Plains, Tennessee

The largest deposit of water-soluble mineral which we have found in the East Tennessee area is located in the Cherokee National Forest near Tellico Plains, Tennessee. There in an outcrop of black shale are found veins of water-soluble minerals, apjohnite predominating. This identification has been made on the basis of chemical analysis carried out by the authors and by optical analysis done at the University of Tennessee.

The material is very fine and crystalline in nature, quite fragile when fresh but rapidly hardening as drying takes place. The color of most of the specimens is pure white when first obtained although some of them become tinged with yellow on standing which is probably due to oxidation of ferrous compounds. Some specimens show a definite orange color which is probably halotrichite, an iron-aluminum sulfate. Other pieces are pale green which could be either melanterite or voltaite.

Sommary

All in all we have obtained good, and in some cases, excellent specimens of eleven water-soluble minerals in the East Tennessee-Western North Carolina area. So if you are driving along the roads of this region keep an eye peeled for discolored patches on the rocks beside the road. If you climb up a cliff for fifty or a hundred feet you may find a patch of moss or an outcrop of quartz, but if its a new water-soluble mineral for your collection, it was worth it.

ROCK TELEPATHY?

By FRANCIS E. SCHILLER
Luke, Maryland

When I moved from Wisconsin to Maine, in 1947, I brought along a few of the choicest specimens from the rock collection that had taken me twenty years to accumulate. My major collection, consisting of many varieties of sandstone and odd glacial rocks, was left behind and has, no doubt, been used for "fill." I had planned to have an indoor fireplace built of these many colored stones and it was with regret that I left them to meet such a drab fate.

Gem minerals and crystals are not common in Wisconsin due to the rareness of good pegmatite formations. In 1946, however, I visited the southwestern part of the state, and found a piece of chalcedony that had a crust of milky-white crystals on one face and a layer of yellow crystals on the other side. It was a beautiful specimen and I made several attempts to find the place where the crystals were formed but was unsuccessful. Perhaps this single specimen was lost from the knapsack of some mineral hunter who had passed that way before my visit.

In the next few years, my attention

was returned to the Wisconsin specimen every time I located new drusy quartz specimens in Maine. It was interesting to compare the two types. As my knowledge of geology and mineralogy slowly grew, I resolved to return to Wisconsin and find the mother lode of the chalcedony specimen. With the aid of road maps, I retraced all the sideroads we had taken and then marked the spot where the specimen had been found. I borrowed all the books I could find that described the geological aspects of that area and studied them diligently.

In 1950, my wife, son and I left Maine on a vacation and after a fast trip through the Great Lakes region, were approaching our destination in southwestern Wisconsin. As we neared the narrow circle on the map my wife took over the task of driving and we proceeded at a leisurely pace down the little used road I had chosen. I sat in the front seat and studied the hills carefully. What was I looking for? I did not know, but I could sense that we were nearing the "place." I was vibrating like a piano wire when suddenly, for no known reason, I held up my hand and said, "Stop! This is it."

The car came to a halt on the side of the road and my son, Gary, and I were soon scrambling up the hillside with hammers in our hands and knapsacks on our backs. In a few minutes Gary let out a yell and I knew we had struck "pay dirt." Scattered on the hillside and in the rain gullies were small pieces of chert and chalcedony. The specimens were small and looked like fragments of larger rocks. Small crusts of drusy quartz crystals covered the surface of most of the rocks and were of many colors. Crystals of a brown hue seemed to be most plentiful but there were also yellows, reds, whites, and various shades of purple.

We carefully combed the hillside and finally reached the crest where we could look down in the valley on the other side. There, in a casual pile, were larger rocks. Frantically, at first, and then cautiously, we dug into the pile. Here was real success. Soon we were sorting out large specimens of every color and often one rock would have three or more shades of crystals. The rocks appeared to have been subjected to intense heat as if the chert had been fused into crusts of crystals that lined the wrinkled and folded walls of the cavities and outside surfaces.

We spent three hours on that pile and soon had our sacks filled with good specimens. As the picking grew poorer, and because our time was limited, we searched the immediate vicinity for more piles but did not find any that offered promise. We were elated with the rocks we had found so we started back to the car. My wife, who usually turns a cold eye on any rock, after a three-hour wait, was astounded at our good luck. But was it luck? What instinct had led us to drive 1500 miles and stop our car on a road that we had never traveled before?

On the walls of our front hall the most beautiful of the specimens are on display. Every now and then I take a compass and hold it near the Wisconsin rocks. But the needle does not dance. Nothing happens. The attraction was not due to magnetism. Is there such a thing as rock telepathy? Too many other rockhounds have had similar experiences so it is unlikely that this is an example of coincidence.

(The locality for the drusy quartz is Monroe County—between Kendall and Wilton—on a county trunk road in southwestern Wisconsin).

Exchange ad brings "Christmas" presents!

Editor R & M:

Had hoped I could write you long before this, but like your magazine R & M, the ad results are almost as good, and Paul and I have our hands full filling requests for our Agatized Coral from Ballast Point, Florida.

We have "met" some wonderful people thru the ad, for we both thoroughly enjoyed the letters and the boxes they have sent us in exchange for our Coral. We have sent our box first and left it up to them to send whatever they cared to exchange, and it has been like "Christmas" with all the surprise packages we have received.

Mrs. Paul Armstrong
P. O. Box 352
St. Petersburg, Fla.

April 20, 1954

JADE CUTTING IN HONG KONG

By Commander John Sinkankas

EDITOR'S NOTE: This is the fourth of a series of articles by Commander Sinkankas about his collecting adventures while he is serving aboard a U. S. Carrier as Executive Officer. This ship, a light aircraft carrier, is enroute to the Far East where it will spend considerable time and in doing so, will visit many ports. We hope that you will find pleasure in reading these little episodes out of the life of a regular naval officer who follows the sea professionally but whose off-hours interest is the world of minerals.

One of the pleasures that falls to the lot of the professional Naval officer is that of travel and with it the opportunity to see more of those wonders which capture his fancy. A wonder to me has always been how the Chinese could cut and polish jade with the traditional and extremely primitive equipment that all authorities say they use. Surely, I thought to myself — they must use a bit of modern equipment, perhaps an electric motor, maybe even a diamond saw blade. Well — seeing is believing and it took just that for me to believe that they could do it and furthermore do it well, just as well in less time than the average amateur in the States with a garageful of equipment!

Accordingly when I heard that our ship was going to Hong Kong I impatiently awaited the day when we would sail proudly into the mountain-rimmed harbor of this famous port and I could go ashore to hunt out a jade cutter. I didn't have much hope on this score because most cut jade was understood to come from China, however I visited the jewelry store of Mr. T. Y. Lee on Gloucester Road, in Victoria, the largest city in the British Crown Colony, and asked him if there was such a place. The genial Mr. Lee soon assured me that indeed there was and that when I was free he would take me there for a visit. We soon arrived at a mutually satisfactory date and at the appointed time I met Mr. Lee and set off on what was truly an eye-opening experience.

We left Mr. Lee's establishment and headed the car toward the busy Central District of Victoria where the most business and shopping is conducted, passed through to the opposite side into a typical native quarter where brilliant banners and signs lined the street and all was hustle and bustle. There were no English establishments here — only Chinese as every sign and every face indicated. In a few minutes we drew up before one of a dozen or so jewelry shops which lined the street at this point and stepped out on the sidewalk. Mr. Lee passed through the shop into the back and then ascended a flight of dimly-lit stairs to the second floor. At the front were my cutters and I must admit I was a bit excited to suddenly leave the modernity of the street below and see before me a bit of well-preserved and authentic Chinese life of centuries ago.

In a room fronting the street and completely open to that side were six Chinese who were busily engaged in various lapidary processes, they looked up curiously when we entered and then returned their attention to their work. I was formally introduced to a Mr. Ma who was in charge of the shop and who cut jade either on consignment or on a shares basis. The purpose of our visit was explained and as soon as the fact was made known that my interest was far from being the idle one of most tourists, every operation was carefully explained and all questions answered.

Before going on into a description of the actual techniques and equipment used it may be wise to begin at the beginning, or with the jade itself.

I was told by both Mr. Lee and Mr. Ma about how they procured jade for cutting. The material they use is of course the Burmese jadeite and is sent in from Rangoon. Mr. Lee showed me some manifests covering recent purchases and stated that he and a number of other parties interested in jewelry jade get together a common fund and dispatch one of their number to Rangoon to bid in on jadeite boulders. Auctions are held three or four times a year and interested parties gather from all over to buy.

Prior to being put up for bids, each boulder is cut deeply with a groove about ½" wide and deep enough to penetrate below the much altered outer layer of the boulder. These stones are dug from alluvial deposits in Upper Burma and are recognized by the miners by both their high specific gravity and traces of the fibrous structure which remain on the outside even though greatly obscured by deterioration and bearing not the slightest trace of any color except a nondescript rusty tan. I was shown several such boulders which had not been cut into yet and noted that depending on size and other considerations, more than one sampling cut would be taken if the owner of the boulder felt it would give him more information on the quality inside. In any case it is a gamble as both of my hosts were careful to explain since a favorable indication of good color in a polished groove could, upon sectioning, prove to be the only area that had any useful color at all. Quite the opposite could also be true however and that is where the gamble is even more exciting since cases are known every year where a dullish sort of stone turns out a section or two of rarest brilliant and translucent emerald green color — the par excellance of gem jade. The Chinese are great gamblers, it is almost an opiate in its effect and what would jade buying be without this wonderful and stimulating element of chance?

In any case, after the Chinese compatriot has spent his money as wisely as he knows how, he ships his precious stones by air to Hong Kong where an import tax of 30% is promptly affixed and so certified by rubber stampings on the boulder itself. The stone is then brought to Mr. Ma's shop and a great consultation ensues to decide the direction of the first cut. Great is the wailing if the two sections falling apart under the saw are the altogether too common grayish green which is more gray than anything else and absolutely worthless to a Chinamen for jade in jewelry. He must have green — the greener the better and if approaching the bluish-green gem color, fortune smiles!

In this partnership arrangement it is apparent that losses of great magnitude, and likewise gains, are held to reasonable levels from the moment of mining to the moment of sawing into slabs. First of all the miners must be paid for the stones on the basis that all are worth a certain amount and this without taking any kind of peek. Then the buyer in Rangoon who will sell at auction must so cut into each boulder that he gives enough enticing glimpses to make the hardened buyers get up their gambling blood. If a piece is scored and seems dullish you can rest assured that one cut is all it will get, while if the first slot shows fine color others will be cut at some distance away to verify or disprove the existence of that color from end to end. One such fine boulder with several fine-color cuts may spell the difference between a profitable auction or merely breaking even.

Lastly the partners in Hong Kong who pooled their money take the final element of great loss and profit by agreeing to share alike in each boulder as it is slabbed. If their buyer struck it rich so did they and vice versa.

As to the prices of jadeite boulders, I was shown a pebble measuring about 8" in length and about 4 square inches in cross section. This small pebble weighed several pounds and had some dark green of fairly good hue at the bottom of the test slot. Surface alteration had proceeded to a depth of about ¼" and discolored the outside zone enough to make it worthless. Bearing these dimensions in mind as well as the useful volume, that single piece cost the buyer the equivalent of $20.00 American! That's quite a sum for a small pebble like that but it is a sort of lottery ticket and possibly well worth it when eventually slabbed.

Now to get on with a more detailed description of the shop and its layout.

The workshop itself measured about 15 x 15 feet and in this small space were placed 6 work benches with the polishing bench nearest the window which seems reasonable enough but the carver of small stones was furthest back in a very dim light. Between the two

were the four other benches, each so disposed so as to cast the daylight upon the place where the actual operation was going on. In one corner was a desk which constituted the base of operations for the shop superintendent who also used the hooded desk lamp for marking of slabs, looking through them to check best color areas and also to grade stones as well as the bit of paperwork that had to be done.

The lapidary bench of the Chinese carver is an extremely simple affair made of stout timbers mortised and tenoned together, and with a down slope to the top whose purpose we shall presently see. The top of the bench is triangular in shape supporting the rotating spindle bearing at the narrow end and exposing the blade or other tool at the wide end. This end is also lined with sheet metal to catch water and grit and run it down by virture of the slope into a bucket placed under the lip of the trough. The operator sits on one side of the bench and holds his work over the top and under the blade, or against it as the case may be. If splashing is the rule such as in the sawing operation, a 3" wide strip of sheet metal is placed over the top of the bench and covers the blade. The worker cocks his head to one side to get a good view and passes an arm around this screen to hold the stone.

Below the surface of the top is a pair of bamboo treadles with stout cord attached to the extremeties of each which in turn are fastened to a strip of flexible leather strapping looped three times over the wooden spindle shaft. By alternately depressing each pedal he is able to impart a spin to the spindle, first one way and then the other. In operation there seems scarcely a pause from the moment the motion of the spindle ceases to when it snaps back to the opposite direction. Naturally my more mechanically minded

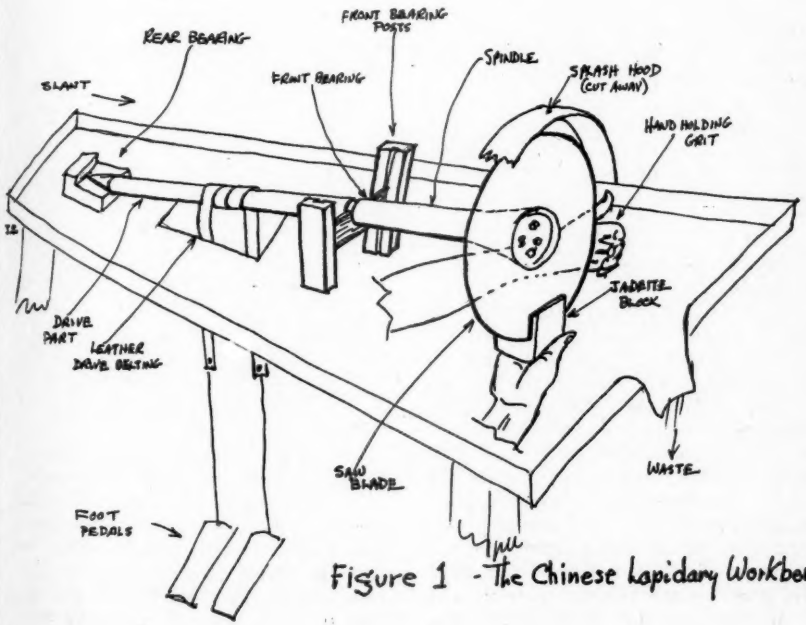


Figure 1 - The Chinese Lapidary Workbench

readers may wonder about the inertia of the spindle and its attachments and the effect it would have on starting and stopping the the motion. In this respect, great cleverness is shown by the workers in making the spindle of light yet rigid wood and all attachments as light as possible so that the entire spindle assembly weighs only several pounds at most with this weight being concentrated in the spindle shaft for all practical purposes. This enables the spindle to be set in motion very quickly and stopped just as readily. It can be seen that if something heavy like a conventional carborundum grinding wheel were to be affixed to this spindle it would severely handicap the operator and cause much fruitless energy to be expended in just stopping and starting the wheel. Without power-driven spindles practically all of our modern attachments would be useless to the Chinese cutter. Before leaving the lapidary bench it may be remarked that the cutter sits on a stool which is part of the bench, high up enough so that a stiff-legged and powerful push is possible with his feet. Also each bench is easily and quickly converted to any lapidary operation which may be required by merely changing spindles.

Spindles themselves as remarked before are light yet stiff wood about 28" in length and tapered from the business end to almost a point. This point is seated in a half-socket fastened to the bench and movable to accommodate spindles of different lengths. The socket is of wood and lubricated with some kind of wax. About two thirds of the distance toward the butt or business end, the spindle reaches a diameter of almost three inches and is grooved deeply to provide the front bearing point. A piece of bamboo about a quarter inch thick is fastened between two posts on the top of the bench and receives at its upper end the groove on the spindle. The bamboo support is also cut out with a semicircular notch to fit snugly in the groove of the spindle. Now we can see that the spindle is supported at the necessary two points — at the rear where it is sharply tapered in conical cross section and near the front where it is grooved and rests on a matching strip of bamboo. The spindle is held down and given a spin by the three turns of leather which in turn are impelled by the foot pedals. Changing spindles is simplicity itself, the feet are taken off the pedals to slack the leather strap, the spindle is lifted slightly to free it from its bearings, and then slid forward to free it from the encircling leather. This process takes less time than it does to talk about it. The two posts supporting the front bearing strip of bamboo are pointed outwards with a series of notches and wooden wedges to accommodate different lengths of bamboo strips. By putting in a short strip of bamboo, it slides down the opening between the posts nearly to the bottom and therefore lowers the spindle. This is obviously used for small engraving points which have small diameters. If on the other hand a large saw blade must be used, the spindle must be raised to give the necessary clearance above the drip pan so a longer strip of bamboo is placed between the posts and is engaged further up.

The business end of the spindle gives no greater similarity than to a gigantic lapidary's dopstick and in construction it is essentially the same. The end is turned to a slight flare and coated liberally with dopping wax, a home-made product incidentally. The saw blade or whatever gadget is used is also heated and fastened to the hot wax. On large saw blades a few holes are drilled near the center to allow some of the wax to ooze through and lock the blade a little better when the wax has cooled. While the wax is still workable the blade is spun and checked for edge and side alignment. With a few adjustments it is made to track absolutely true. Carving and engraving tools are heated and embedded in the wax of a spindle whose business end is made smaller for the greater delicacy required.

Saw blades are made of roofing tin even when such blades reach a diameter of 14". They are cut out in circles and placed in a wooden die and an inner circle of about 4" diameter carefully

pounded down to the depth of about ½". This gives the blade a step next to the spindle and if done properly stiffens the blade. The web is also beaten to add stiffness.

This must be done skillfully to avoid bumps and pits which would result in thick saw slots. The whole purpose of using roofing tin in the first place is for economy's sake and to reduce the work required to section stones. It is axiomatic that a thinner blade will cut a thinner slot and a thinner slot means less material to abrade away. With such a blade and using moistened carborundum grit of various grades, an expert sawer can section a piece of compact jadeite measuring 1½" x 2" in from ½ to 1 hour. This performance I witnessed and am compelled to believe. An interesting sidelight was cast at this point by Mr. Ma who stated that Shanghai cutters saw at much faster rates than Cantonese.

Two grades of carborundum were used for sawing — about 220 grit and 400 grit as estimated by observation. The coarse grit is used to saw all pieces exceeding over about 4 square inches in cross section and prevents the operation from becoming too slow although a wider saw kerf is obtained. The 400 grit is used for sawing small slabs, trimming, and other delicate work. Very large stones are sawed with stouter saws and coarser grit. Saw kerfs on slab work are about 1/32" in width. The proprietor of the shop was careful to explain that with expensive rough larger cuts such as would result from our conventional diamond saws are far too wasteful. All in all he felt, we had little to offer over the Chinese methods except a saving of time, a commodity whose conservation worries the average Chinaman very little indeed.

Saw blades come in all sizes from the tiny ones used for carving to one which I saw in the shop of about 20" diameter. Those most used are fastened to spindles and never dismounted until they are worn beyond efficiency.

After sawing the next step in preparing a cabochon is that of grinding to shape, also accomplished on a device of child-like simplicity. A ⅜" to ½" square iron rod is bent around into a circle and the ends butted and welded together. It is trued up as well as possible and then mounted on a four-spoke wooden wheel which in turn is fastened to a wooden spindle and again spun for truing up. This extremely simple device is the grinder and works like a charm under the nonchalant skill of the operator. As in sawing, loose grit of several grades is fed to the iron rim and the pre-formed cab is ground to shape. A finer grit (400) is used after washing off the coarse for giving a finish suitable for the next stage.

Slabs when they leave the saw are sent to Mr. Ma who seats himself at the desk and with a set of iron templates selects and inscribes the most suitable outlines on the best areas of the slab. His templates are flat iron sheet cut and filed to shape and then cemented with dopping wax to ⅛" diameter bamboo sticks about two inches long and with a template fastened to each end. When the area is selected, he lays down the template on the surface and inscribes the outline with India ink using a bamboo writing brush. His stroke and narrowness of line are steady and the indelible ink does not disappear readily under the wetness of grinding.

Cabochons when ground to shape are sent back to Mr. Ma for another inspection to see whether further work is warranted. He looks them over for flaws, disfiguring spots or colored areas, etc. and then when satisfied gives them to the polisher.

The polishing bench is exactly the same as other benches but the splash hood is not used. Properly speaking the polisher does two things, he sands the stones as well as polishes and both steps use two different pieces of equipment. Dopping is accomplished by the use of heat and a black wax which is compounded from crude shellac. Dopping ingredients other than the wax are unknown because the language barrier prevented me from making any sense out of what Mr. Ma was trying to tell me he used, in any case something is added to the wax be-

sides crude shellac. Dopping sticks are enormously long 1/8" round sticks of bamboo about 12" long. This puzzled me until I saw why a little later on.

To go on after dopping, the stones are sanded by abrading them against a wheel of about 10" diameter and 3/4" thick which is compounded from cast shellac to which very fine carborundum grit has been added. This wheel is really a grinding wheel but contains far less grit than a conventional one. It too is fastened to a spindle permanently. Both the edge and sides are used for sanding, the edge developing in time a groove and becoming quite bumpy, a situation which the polisher regarded philosophically. In sanding he used a dish which appeared to contain rottenstone and water, dipping up the mixture from time to time to keep the work wet. Apparently the combination of sanding and semi-polishing in this operation left the surface of the jade with an excellent gloss and absolutely prevented lemon-peel finish.

When this preliminary operation was completed, a leather polishing disc mounted on a spindle was substituted and the final polishing begun. The leather disc was almost 13" in diameter and about 3/8" thick, and quite rigid. I believe it was made up of two thicknesses of cowhide glued together with smooth sides in. The leather was barely dampened with a fine white polishing powder on the side and the polishing commenced. Seizing a handful of dopped stones by their narrow and flexible bamboo shafts, the polisher held all of them simultaneously against the wheel, there must have been at least thirty dops in all. With one hand he grasped them down a bit from the stone ends and pushed the butts with the other. Letting them work and tilt as he polished, practically all of the tops were soon glistening with a fine polish. The area near the girdles were not accessible this way and have to be polished stone by stone. The speed of rotation of the spindle is quite slow, heavy pressure used, and since all the dops were held like a sheaf of wheat more pressure could be applied than with a single dopstick. It was obvious that polishing was hard manual labor at this stage of the game.

The polishing powder used for the final operation was not recognizable and its constituents were unknown to the shop owner. All he could say about it was that it was bought from a Chinese in Hong-Kong who kept its formula a secret. Both Mr. Lee and Mr. Ma were desirous of getting a better polishing powder since they felt the medium they were using did not give as high a finish as was possible.

After stones are polished they are given a final inspection and carefully graded in order to assign selling prices. These experts in qualities of jade have developed an extreme sensitivity to each nuance of shade and unerringly assign a quality rating to any stone even if viewed by itself. It takes only a glimpse in a Jewelry store to see at once the vast spread in color between superior stones and less valuable ones even though they all be green. The slighest admixture of yellowish or brownish tones immediatelv spells lower quality. The following determine the very best jadeite for jewelry:

1. Emerald green color, pure and intense.
2. Color evenly distributed without streaks or spots.
3. Highly translucent, and free of cracks and flaws.
4. Highly polished.

Lower but still valuable grades may depart from all criteria except that of color which even though mixed with white must still be emerald green. Yellowish green jades such as the New Zealand and Wyoming nephrites are comparatively valueless alongside the bright and pure-hued Burma jadeite.

We have taken a piece of jade on a simple voyage at this time from purchaser to buyer of the polished stone but some of the techniques glossed over lightly are well worth discussing in detail, especially that of sawing and later, carving of jewelry stones.

In sawing the equipment and its operation have been spoken of but not the methods of manipulation of the stone. Picture again the workman seated

in front of the saw blade and with his forearms resting on the bench top. Daylight comes from the left and falls upon his hands, the blade, and the piece of jadeite he holds. His left hand supports the block of stone under the lowest point of the blade while his right is filled with a handful of wet carborundum grit. As the sawing progresses this hand covers the blade ahead of the stone so that it runs through a puddle of grit. He automatically works his fingers and palm to continually supply grit to the steel edge yet always keeping the flesh away from direct contact with the sharp edge. As the blade oscillates swiftly back and forth, grit is drawn in and out constantly supplying sharp particles where they will be most effective. This is "mud sawing" but far more efficient than ordinary mud sawing because the cut is attacked from both ends and is also kept clean of used grit and stone powder. Periodically he dips the jade block into the water-filled bucket to wash it off and wets the other hand to add a bit of moisture to the carborundum.

His eye is uncanny — a cut is started exactly parallel to the previous edge and continues that way until a thin wafer has been detached, all by hand and of an accuracy comparable to machine saws. He works by 'feel' — pressing the work as needed and slowing up as needed, he can feel the vibration within the stone which tells him that the blade is 'biting'. When he gets through he delivers a slab of jadeite which is flat on both sides and automatically lapped so that no trace of saw marks remain, — an annoying feature of power saws.

Large boulders are sectioned by several cuts from opposite sides and then the block split apart. Small pieces are sawed completely through. Still finer cuts are done with smaller and thinner blades and finner grit but the basic technique remains the same. Very small pieces are supported on brass plate in the palm of the hand when being sawed.

Preforming is done by sawing off the corners of the blanks and accomplished by one man customarily assigned that task. He not only takes off the corners but also gives the cabochon a crude rounding using a number of small saw cuts for this purpose. Actually when he gets through with the pieces the grinder has very little material to remove.

In grinding the technique is the same as sawing insofar as using the hands is concerned, one hand holds the rude cabochon against the narrow steel rim while the other bathes the rim in a slurry of carborundum grit and water. This should explain why such a narrow steel rim is used for grinding, it would be difficult otherwise to keep it supplied with grit. Grinding also proceeds very quickly needless to say, also, the stone is not dopped but held skillfully in the fingers. After rough grinding, the wheel is washed off as well as the inclined pan on the table and finer grit substituted for finish grinding. Great care is not exercised to achieve absolute symmetry in the finished stones, only reasonably so and that is considered good enough. Better material is of course given better treatment.

The engraver in Mr. Ma's shop as I said before, occupied the position farthest back from the window although one would suppose that the nature of his work required the best light of all. It turns out however, that the best stones are invariably cut cabochon and only those of inferior quality are given over to the engraver to work into the small carvings so often seen in jadeite. Since his work is not so financially rewarding, mistakes are accepted.

Our carver works with the same basic bench and spindle again but has a large variety of steel points of varying shape for his work as well as a similar array of leather points for polishing. He is furnished as raw material, small slabs which have been candled and found unsuitable for cabochons. These he dops to plates of window glass to get a larger support and at the same time afford translucency lest he inadvertently cut through the carving in a place not meant to be pierced. By the depth of the color seen through the piece he can judge the depth of the cut.

The points he uses are made of iron

and look somewhat like roofing nails but a little longer in the shank. The heads may be flat, tapered, rounded, etc, — whatever his own experience has shown to be useful. Selecting a suitable point, he heats it and imbeds in the wax of the spindle end, and, while the wax is warm rotates the spindle to line up the bit. When the wax is cold, he commences work but since he must use two sets of fingertips to support the work, a problem arises on how to feed grit to the cutting edge. This is solved neatly by slipping on a bandage on the forefinger of his right hand which is kept moistened with grit and water from a pot nearby. The piece is supported by the fingers of both hands while working but the bandaged forefinger is held aloft and dips down periodically to supply a bit of grit to the spinning tool. There is plenty of room underneath the end of the spindle for both hands and yet the spindle is not raised so high that resting of the wrists on the edge of the bench is impossible. This, like in the other operations, provides steadiness and prevents fatigue.

It should be remarked that the spindle used by the engraver is of steel and of small diameter so that it may spin at a much higher rate than the larger wooden spindles used elsewhere. Also the end of the spindle may have a hole and chuck arrangement in it for exchanging working points or a ball of wax for the same purpose.

After the small bit of jade has been suitably roughed out, it is given a prepolishing or sanding treatment using matching shapes of grit-impregnated shellac points. This sanding treatment is then followed by polishing with leather and the work is complete. The carver does all of these operations without assistance.

There is our review of jade cabochon cutting and small carving work of the Chinese. Although being conducted today on Queen's Road in modern Victoria, it differs little from the techniques described by other authors in years past. My general impression of this fascinating shop was that actually we had little to offer in improvement even with all of our modern equipment. Their methods are reasonably fast and accurate and certainly the equipment and supplies cannot be excelled for cheapness and simplicity. I do not advocate of course that we retrogress but ask only that their methods be looked at more favorably in the light of the conditions under which they work. In this way the comparison is far more fair.

A STILL LARGER ARKANSAS HERKIMER "DIAMOND"

By BYRON C. MARSHALL
204 Central Avenue, Hot Springs National Park, Ark.

In the January-February 1953 issue of ROCKS AND MINERALS, appears an article by Lt. Bill F. Francis entitled THE LARGEST HERKIMER "DIAMOND". This was of special interest to me as is any article on quartz crystals, as I have in the past spent much time and effort as well as money in getting together what is no doubt the largest collection of Arkansas quartz in existence.

This collection consists of about twelve hundred specimens, no two alike. Some may be surprised to learn that Arkansas has had such a great diversity of types. I use the past tense, as now one could not scrape up much of a variety. I might add, I was fortunate in being here during the period when the U. S. Government was sponsoring several companies digging clear quartz for radio oscillators. This was about ten years ago. Of course only clear crystals that showed no twinning, were of use for oscillators, and as only a small percent of what was dug could meet the specifications, there was a tremendous amount of specimens available to collectors. So, I was able to obtain the tremendous variety. I had no idea myself that near such a diversity could be obtained or even existed in this state.

But to get on with my story, one of

the specimens I obtained, was a very large doubly terminated crystal. It is so close to the picture of the one shown in the above mentioned article, that it might pass for it except for size. The one described in this previous article belongs to Mr. Don Hurley of Little Falls, New York. Mine is opaque though in small areas it is quite clear on surface but strikes pale smoky areas underneath as well as some small amounts of tan iron-clay inclusions in some of the underlying fractures and channels. It is fairly bright on outside surface, reflecting light well. In places it is subdivided into shallow cavernous impressions with more or less imperfect subterminations. It has quite smooth, well defined M faces on three sides around its center. On two other faces in center these M faces only smooth about half way across these faces, while the sixth M face is so rough and broken up as to be hardly definable.

While the New York crystal weighs eighteen pounds, this Arkansas one is twenty-five pounds and three ounces. The New York one is from termination to termination ten inches. This one is ten and seven-eighth inches in length. The circumference of the New York one is twenty-four inches. This one is twenty-five and eleven-sixteenths inches. The diameter of the New York one is seven inches by eight and one-half inches. This one is eight and one-half inches by nine and three-sixteenths inches.

The Arkansas specimen is from about two miles north of Glenwood and therefore in Montgomery County, though Glenwood is just over the line in Pike County. I mention about this crystal, as in the article on the New York crystal, it is suggested that some one might run upon a larger one. As stated I obtained this crystal about ten years ago, and I have been wanting to write of this one since the January-February issue, but am only now finding the time.

I might add as a matter of interest, that the party I bought this one from told me that a few years previous, they had one about half again the size of this one, but had left it, and some one broke it to pieces. Now who in the world would want to do that? What a shame. I have inquired of various ones and the one that I have and the one that was broken, are the largest I can learn of having ever been dug up in Arkansas. I find information of two or three in the past that were half to two-thirds the size of the twenty-five pound three ounce one. In the past, I had several hundred from about the size of a hickory nut on up to two or three pounds. And I have had hundreds of very small ones. They are identical with the ones gotten in New York of the Herkimer type. In this state, some diggers call these Hot Springs "Diamonds". Some have various inclusions and some movable air bubbles in a water channel.

Some time I will try to get around to writing another article on this type of quartz crystal. We have many types and they are most interesting and I feel sure that others would like to know more about the Arkansas "Herkimer" type and have information on these for comparison with those from New York. So far as I can remember, I haven't seen an article on the Arkansas ones. As already stated this type in smaller sizes have in the past been dug out here by the thousands. They are usually found in small pockets in a light tan colored clay and sometimes from clay banks, and again scattered on the surface where they have washed and eroded out. Of course the giants are very rare and it is interesting that such large ones could have formed.

Speaking of our regular and common type of quartz crystals, real mammoths in size have been found. Some weighing up to three to six or possibly more hundred pounds, both single and others doubly-terminated. But this is still another story, so let's call it quits for this time.

Would be lost without R & M!

Editor R & M:

Enclosed find renewal of my subscription. I would be lost without ROCKS AND MINERALS.

Ivan Sackman
620-4th St. South
St. Cloud, Minn.

June 23, 1954

JADE, MINERALS AND GUATEMALA

By JAMES A. TAYLOR

Glen Ridge, N. J.

Several years ago Dr. William Foshag, Curator of Minerals of the National Museum, gave an address before the New York Mineralogical Club on the Jade of the Ancient Mayas. The Guatemala Government had asked him to look over the National collections and identify their specimens. Dr. Foshag did so and identified the Maya jade as jadeite. He further stated that the geological maps made by Sapper in 1878 showed large beds of serpentine in Guatemala and that both the geographical distribution and the great quantity of jade relics in that country pointed to these beds as the source of the Maya jade.

On the spot I determined to go to Guatemala and have a try at finding the jade. From childhood I had been deeply intrigued and shocked at the story of the cenote of Chichen Itza and its human sacrifices. The mystery of their civilization has continued to intrigue me and since I have acquired an absorbing interest in minerals, the further mystery of the undiscovered jade added another incentive.

After considerable research and kindly leads from Dr. Foshag I was finally on my way in February with Mrs. Taylor and her sister, Louise Thomas. In deference to the rest of the party it was a combined sightseeing trip and my objectives. Both Dr. Foshag and Dr. Pough had told me that neither the National nor the New York Museum had any worth while specimens from Guatemala and I set out to get some.

Looking at a map of Guatemala is futile. Both coasts are hot, wet, tropical jungles of low altitude and the northern part unexplored—the home of mahogany, chicle and bananas. There are a few great table lands, such as the site of Guatemala City and some other cities. The rest of the country is just mountains and such mountains! Many of them are volcanos with typical 45° sides but they seem to offer no impediment to roads which hang and twist on their sides like a thread on a wool coat.

As to minerals, the first thing one discovers is that most of the country is covered with a blanket of volcanic ash, consisting of pumice, clays, debris, rocks and occasional obsidian, from a few feet to a hundred feet deep. This ash is firm and cemented sufficiently to make almost vertical, deep road cuts. The underlying rock is invisible.

Dr. Richmond E. Myers wrote an article in ROCKS AND MINERALS in September, 1939, which summarized nicely the mineral deposits. Most of these deposits were abandoned by 1954 but the article which I took with me is still a good directory.

But to take things in order. We flew nearly everywhere to save time and always in capable and sturdy planes. Of course we took too much luggage and were probably overweight. Do what you will there are times when you have to carry the stuff yourself. Next time it will be only two of each.

We landed in Mexico City after a 12 hour night flight, spent 3 days there, two in Acapulco—hot and crowded—two in Taxco (Tasko) and Cuernavaca and back to Mexico City. Taxco is exceedingly picturesque but the old silver mine is closed and the dumps void of interest. I spent an afternoon on them. Possibly I missed a bet in not going to the original cut across the canyon but when I saw it, I was too dead tired to look even for gold.

At Mexico City we saw a bull fight and hereafter any one can have my seat. It was a dumb performance. One bull kept falling down when he tried to turn and two of the matadors had to have a workman come in and kill the bull with a knife. I wondered if there were something lacking in my sporting blood but I was relieved when next day the papers panned the performance from beginning to end. It is nice to have bull fighting

completely out of your system. Incidentally it is a slur in Mexico to refer to "bull fighting." You say you are going to "see the bulls." From either aspect they can keep it.

The big kick of the whole trip was Chichen Itza (accent on last syllables). We flew along the shore of Campeche to Merida in Yucatan and drove 80 miles to Chichen through miles of sisal plantations and Maya (my-a) huts. It is hopeless to try to describe these ancient ruins. They write books on them. But when you climb the 92 steps of El Castillo, the great pyramid, and look over that vast scene of architectural genius something would stir even in a clod. The ball court was something new to me in sport. The captain of the winning team was required to cut off the head of the losing captain on the field and the adherents of the winner could take anything the other crowd wore—if they could catch them. One thing is sure that neither team made a side bet with a bookie to lose.

The famous cenote, a 60 foot deep circular hole in the ground into which the ancient Mayas threw maidens as human sacrifices to placate the gods, was just as it was 2,000 years ago. One would have to be dull indeed to miss a stirring of the blood to stand on the lethal platform and imagine the young bodies hurtling into the pool. Years ago a Mr. Thompson who bought the whole area for a song, sent divers down and brought up countless gold and jade ornaments, pieces of pottery, beads and bones and dumped them on the rim of the cenote. A little diligent search by me collected some pottery pieces and the end of a femur of a girl, so I know the story is true. We spent two days there at the beautiful Mayaland Inn. I walked over the site in the moonlight and if there is a more inspiring and mystical experience I do not know it. How these people built these huge stone structures without metals, without the wheel and without any known construction devices is a job for a whole society of clairvoyants.

I have just one strong, vitriolic resentment. No one told us about ticks. I thrashed through the underbrush to the opposite side of the cenote for pictures and scratched those little fiends for over a month. I was covered with their agonizing bites.

We flew over Uxmal on the way to Guatemala City and over the dense, tropical rain forest of Peten where I really believe I saw a number of unvisited ancient Maya cities. It was a thrilling trip.

The tourist traffic to Guatemala has nearly disappeared due to the scare of Communist violence. Their government is slack in not broadcasting a guarantee of complete security and a pleasant reception. We were there over a month and did not see a vestige of either disorder or unpleasantness. Every one was courteous and friendly and we thoroughly enjoyed their stupendous mountains, fine modern hotels and unique Indian life. I suppose one could get an argument if he broadcast a challenge but when you mind your own business anywhere abroad you have no trouble. Government policies and tourist enjoyment need not mix.

The hotels were the last word in comfort particularly the Casa Contenta at Lake Atitlán. This lake is in a vast crater surrounded by old volcanos and most spectacular. At the ancient hasienda hotel at Chichicastenango we had a room 25x30 with a large ante room filled with priceless Spanish antiques. It is run by a graduate of Montclair Academy in New Jersey, a most cordial host. Guatemala City is an up to date bustling city. Antigua is a must. What the earthquake of 1773 did to it is appalling. The coffee plantations in the shade of big trees (4,000—6,000 feet) are most interesting. Incidentally the hotel cost of coffee is 80c a pound after being sent to New Orleans, diluted with inferior brands, roasted and sent back.

There are a few places you can reach by plane and the beaten routes by bus but the only way to go where and when you want is by private car. The drivers are top notch and seem to ignore the probability of a thousand foot drop. Also, none of them take it.

Dr. Foshag had told me of the interesting find of a jade worker's tomb

containing a 200 pound block of fine jade together with the worker's tools which consisted of powdered jade, pieces of string and hollow bamboo for the holes and circles. His hands were the only power. On this block are long straight exceedingly narrow cuts exposing beautiful color. Any jade cutter can admire the unending patience of those old cutters. One of my plans had been to hunt near the old tomb on the theory that such a heavy block would not be carried very far. To my surprise, I found that the tomb was on the outskirts of Guatemala City at Kaminaljuyu. I went there twice and in a new ditch near the tomb found a broken matate, pottery, obsidian slivers used for knives and a small image of a coyote. The area is so old that it is undated but believed to be B.C. My fingers itched to dig into many ancient mounds still untouched all over the neighborhood. These mounds will have to go as the city is fast encrouching on the sites but apparently they do not have the money to do the work.

As to that block of jade, I had not known what an Indian could carry. On a mountain 3,000 feet above Lake Atitlán we met an Indian carrying a great rack of earthenware jars weighing about 150 pounds. Our guide asked him from what town he had come that morning. In six hours he had carried that load 18 miles up and down staggering mountains and seemed to think nothing of it. The women carry heavy loads on their heads everywhere. We saw a dance at Chichen Itza with one woman carrying a full cocktail glass on her head and another a bottle of wine. They all walk under the load with a sliding movement of the hips and seemed to be half running. As to that block of jade it could come from anywhere.

As I said I had two objects: to find the Maya jade and to get some mineral specimens which a museum would like. The first was the most important. A week before starting, a story appeared in the New York papers that Mr. Robert Leslie, Jr. had found the "old Maya jade mine". This story nearly killed my incentive and did change my plans. I had intended to camp out for two weeks following the serpentine beds. I contacted Mr. Leslie in Guatemala City and found the reporter's story was pure fake. Mr. Leslie had reported only the fact that in a certain field he had found a small boulder of jade that had been chipped by hand and many chips were near by. The location near El Progresso in Baja Verapaz is on the Motagua River. Mr. Leslie, a delightful person, was most helpful and told me what he knew of the jade from long experience in Guatemala. My revised plans allowed but three days for my search but they were packed and rugged. Of the 120 miles to where I went 20 were under construction for a new highway to Barios and the rest a single track consisting of curves where God certainly never intended a road to go and never planned on meeting another car. Looking straight down a thousand feet was not too much but backing up for another car around a U curve so close to the edge that I could not see that edge added some new diaphragm quivers to my experience. It is real nice to have it to look back upon. My driver, Jose Milla, was I believe about the best driver in the world, or else. In many places on the construction, the heavy volcanic ash dust was beaten to a fluid and rolled down the windshield as it spurted out from the front wheels. All over Guatemala the dust is a problem. We passed some fresh, deep road cuts where I could have picked up tons of obsidian. Many cuts were through the serpentine but showed no jade. At Manzanal I climbed a number of steep ravines cutting through the serpentine with the same result. I did find some fair actinolite, jasper and quartz. In all this area the surface serpentine even in road cuts is badly weathered and pale and under its present condition probably has not enough chromium to give jade the beautiful green that we admire. Mr. Leslie's boulder now in the museum has a heavy proportion of sodium and is soft. Some of the jadeite in the National Museum is superb, imperial green. Most of it is not. The famous collection of Fath-

er Rossbach at Chichicastenango has only ten items out of hundreds with good color and three of these are chips not exceeding 1/2 inch.

My second try at the serpentine was at the extreme other end of the known deposits at Chiantla north from Huehuetenango. Here the color is deeper but the serpentine is folded, contorted and slickensided showing great rock movements. The tough jade formed at the same time would not be deformed. No jade appeared but the half day I had to hunt was no test. It is my conviction that the jade is in these serpentine deposits and will be found though the proportion of good color is so slight that it will always be rare. If I were to try again it would be around Bahaj where the jewelry trade uses really dark and solid serpentine. It passes for jade with the tourist trade. Incidentally the only quick test of jadeite is that it will fuse easily on an alcohol lamp. Nephrite and serpentine will not.

The mining business is at a low ebb due mostly to the inaccessibility of ore deposits where only a helicopter could reach them. So far as I could find there are only three or four working mines, though lead, zinc, copper, silver, antimony, mica, cinnabar, hematite, chromium, sulfur and other minerals are known to exist. Many ore bodies must be buried under the ash.

We were sitting at dinner one Sunday at the Hotel Zaculeu in Huehuetenango and fell into talk with two American gentlemen at the next table. I mentioned that I was headed next day for a lead mine 20 miles up in the mountains. One of the gentlemen smilingly stated that he operated that mine and we would be very welcome. The other ran a lead mine 65 miles away near the Mexican border. After a description of the road to it, I put off the trip. I did go next day to the first mine which was at 10,500 feet. Mr. W. J. Hill, the superintendent, was most cordial and gave us the run of the place. The galena was heavily mixed with honey yellow sphalerite and I got some fair specimens of minium, smithsonite and a fine specimen of a bright yellow coating on galena which seemed to be sulfur since the mine was on the slope of a volcano with sulfur deposits nearby. It was later identified as massicot, an oxide of lead.

I hunted through many a dried stream bed with varieties of jasper, quartz and odd rocks but there is a good reason for the lack of fine specimens. When there are more roads and more mines they will doubtless be found.

So much for jade and minerals. The rest of our trip was sightseeing. In all my travels I have seen nothing in nature more spectacularly beautiful. We reached 13,200 feet without discomfort to view a vast panorama of volcanos, gorges, valleys and mountains in breathtaking masses. I took nearly 200 color slides and practically all turned out well. Looking back, the scenery and the Indians impressed me most.

These Mayas are the direct descendants of the ancient peoples, pleasant though taciturn, and capable of terrific labor. Today they constitute 55% of the population. They live by themselves and have no desire to mix. They are content with their own way of life. All over the mountains wherever there is a piece of soil on less than a 45° slope an Indian has his little garden, often on a built up terrace. I saw one Indian hanging to a rope to stay on his property. They weave beautifully colored textiles on hand looms and you cannot resist some of their handiwork. Their houses are huts of poles and thatch. They sleep either in hammocks or on bunks of boards with a thin matting. Neither suggests sleep to me. Centuries ago before Cortez, they lost the genius of architecture, astronomy and unity of their warlike forebearers. They are exceptionally modest and clean. Conversion to Christianity was a simple matter. They had 15 or 20 gods, so they just added another. At the great markets on Thursdays and Saturdays hundreds gather in the churches or on the great entrance steps burning copal incense outside and candles inside and praying and then often repairing to their idols, just to take no chances.

We visited a steep mountaintop at Chichicastenango to see one of these idols about three feet high with the incense

and fires still burning and rose petal offerings all around. The worshippers had disappeared on our approach.

Voting in Guatemala is compulsory with those who can read and write but optional with others. Many of the Indians speak only Maya. Evidently controlling this vote is important. The Indian seems to have little or no interest in the form of government provided they are left to themselves. They are friendly but scarcely an integral part of the community.

At Guatemala City I had a delightful visit with Mrs. Lilly Osborne, author of Four Keys to Guatemala and the former owner of the finest private collection of Maya artifacts and art, which she had donated to the National Museum in Guatemala City. She is highly informed and interesting. The collections in the Museum are beautifully set up in a superb building but unfortunately not labelled to show localities and donors. The same is true of the Father Rossbach collection at Chichicastenango. At Zaculeu there are labels for most items in the small museum where the United Fruit Company restored the ruins of the old Maya-Quiche tribe. At Quetzaltenango there is a small museum in the City Hall with some minerals with labels and the only Quetzal bird I saw. This bird, the national emblem, is not much bigger than a robin but has a gorgeous green tail three feet long.

There is a collection of minerals in Guatemala City. I tried to find it and was sent to three wrong places and gave it up. Some day I am going to Guatemala again.

The following travel paragraph may be of interest to readers.

The tourist business is almost an American monopoly. I have been all over Europe as well as on this trip and in every hotel I was ever in they speak good English at the desk. I always make every reservation and pay for them in New York before I start. Is is wise to do so for you have your vouchers before you start for hotels, planes, etc. On this trip I used Cook's: in Europe Cook's and American Express and never had a trip-up. Every guide they furnish speaks English. It does not cost you a penny because their commissions are paid by hotels, etc. Just tell them where you want to go and it is their business to get you there and see you are happy. I know just one word of Spanish — gracias (thanks) and I use it. A word of warning—confirm your plane trips 24 hours ahead.

P. S. Since writing the above, the revolution in Guatemala has occurred but everything will still be serene for tourits.

An exhibit of Spruce Pine Minerals

Editor R & M:

After receiving the April 1st TRI-COUNTY NEWS from Spruce Pine, N. C., that had a picture and news of the find of a 475 lb. crystal of mica from the Deer Park Mine, I decided then and there to exhibit minerals from Spruce Pine and vicinity, at the 2nd Annual San Joaquin Valley Show here in Stockton, April 24-25.

Being a member of the Stockton Gem and Mineral Club they loaned me a glass topped case for the exhibit.

At the back center of the case stood a ten inch crystal of sheet mica. On the right was the mounted picture and its story. On the left a five inch card saying: Silicate Minerals from Spruce Pine, North Carolina, "Mineral City of the World", by Rena Allen, 1029 N. Madison, Stockton 3, Calif. In front of the crystal of mica was a large design of mica insulaters and in rows lengthwise were all of the different kinds of minerals—with their names and uses, that the people of Spruce Pine and vicinity had given me, also those that I had found while there.

Rena Allen
1029 N. Madison St.
Stockton 3, Calif.

I BOUGHT 42 ACRES OF A VOLCANO'S GRAVEYARD

as dramatized by T. Glenn Harrison
for FRED MC ATEE
418 Third Avenue Northwest
Faribault, Minnesota

Just for the valuable, beautiful gravestones.

It lies in Minnesota on the North shore of Lake Superior, 14 miles East of Grand Marais next to Paradise Beach Lodge. The gravestones are agate nodules and agate geodes, some containing amethyst crystals.

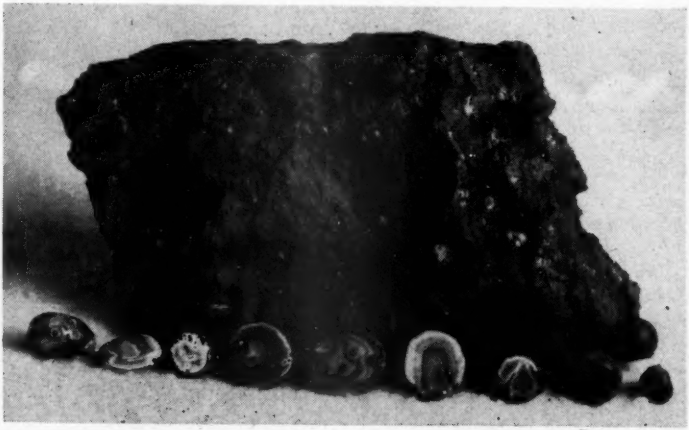
Many millions of years ago, a volcano was drowned by an ever encroaching body of water. Maybe it was an arm of the ocean, maybe it was the body of fresh water that fathered Lake Superior, but the drowning of the volcano caused the terrible fight between the unbelievable heat from the earth's interior and the water. The result was the air bubles in the lava flow became filled with hot solutions containing silica and various oxides causing the formation of agate nodules and geodes.

Other than the early settlers, the deposit was probably unknown until about three years ago. Then some unidentified rock-hounds were exploring the hillside and discovered these nodules protruding from the lava rocks, which are only about 100 yards above the lake.

However, it is believed the first two persons to discover these agate nodules were Howard E. Jackson of Grand Marais, Minnesota and Otto Hubin, ex chief of Police, from Faribault, Minnesota now employed at the Mayo Clinic in Rochester, Minnesota. Mr. Jackson is an authority on minerals from this region and is always delighted to guide a rock-hound friend to the location of each kind of mineral.

Mr. Jackson tells us there were no signs of the rocks being broken up at any place when they first discovered the nodules. I bet they jumped with joy when they cracked open the first ones to see what was inside and discovered beautiful banded agate with simularity of color and pattern to famous Fairburn, South Dakota agates.

At any rate three years ago, Mrs. McAtee and I met with the Minnesota Mineral and Gem Club at Thomsonite Beach near Grand Marais. After chiseling rocks a half day taking out Thomsonites, lunch was served. After lunch some members of our club drove up in a car and got out. One, a lady, walked over and began



Agate nodules from Nodule Hill, 14 miles East of Grand Marais, Minn.

showing my wife some agate nodules. She gave her one and said they used chisels and hammers to get them out of rocks on a hill, 14.2 miles East of Grand Marais. My wife, who was a little disgusted because I brought her on this trip, showed some interest in these newly discovered stones. So I suggested we look up the place. We had a hard time finding it. When we did, we got out our picks, hammers, crow bars and chisels and began to mine nodules. We took home several pounds. I sawed open a few. Some had beautiful amethyst crystals in them; some beautiful banded agate. I polished the agate nodules, and when I showed them to my wife she said, "Let's go back right away before they are all gone and get a good supply of them." When we got back, we found several piles of broken up lava rock. We were there three days and took back a good supply with us to Faribault.

July, 1953, I sold my jewelry store and decided we would spend a rock-hound's vacation at Paradise Beach Lodge; and away we went. The first place we went was to Nodule Hill for some more agate nodules. To our amazement, it looked as if old man volcano had erupted again. There were over a dozen piles of broken up rock, some about 10 feet high and thirty feet wide. The hill looked as if a thousand rock-hounds had been there. We scouted around over several acres and discovered that wherever we dug down a few inches, we would strike rocks bearing nodules.

Our preliminary surveys show that the nodules extend to an unknown depth down into the rocky under-pinning lake shores. No doubt there are millions of these nodules, maybe billions. I just don't know, but I do know that the nodules are beautifully distinct and will make a valuable addition to the rock-hound's collection. They will also make up into beautiful rings, pins, necklaces, cuff links, tie chains, buttons, hat ornaments and countless other things.

These nodules range from the size of a bird's egg to a hen's egg in size, and some are found about three inches in diameter. These nodules are covered with a soft scale of copper and iron. Before sawing them, it pays to grind off this scale as many have eyes on the surface.

After looking the land over, we decided to buy it and we immediately set out to find the owner. We inquired at the Paradise Beach Lodge. They gave us his address. He was Ralph E. Smith, Dayton, Ohio, the famous pilot who accompanied the Admiral Byrd South Pole Expedition in 1933-36. We were discouraged by the land owners on each side of Nodule Hill as they had tried to purchase the land themselves and told me he wouldn't sell. This discouraged me, but I wrote to him regardless. I had a favorable reply and the price quoted for the property. It seemed that his plans had changed, since he was well established in Dayton, Ohio. So by November nineteenth, I had purchased the property.

Now we plan to build on the property in June and cater to the tourist trade from June first to November .We will spend our summers mining and selling agate nodules and nodule jewelry, to the everflowing tourist trade; and to return to Faribault with a large enough collection to supply the demand to rock-hounds through-out the country during winter months by selling for cash and exchanging agate nodules for minerals from other parts of the United States through the means of advertising in mineral magazines.

Any rock-hounds who can pay us a visit on the North Shore will be welcomed and directed to all the other mineral localities near Grand Marais.

LOOKING BACK

Twenty-five years ago in Rocks and Minerals

June 1929

Museums, pp. 54-58. Short notes on Harvard, Field, Philadelphia Commercial, Spokane, Paterson, and the American Museum of Natural History.

Prominent Collectors, pp. 59-60. Short notes by Dr. Henry C. Dake, Charles W. Hoadley, Morrell G. Biernbaum.

Quartz and Chalcedony, by P. Walther, pp. 61-63. An interesting discussion on quartz

Materials Used For Making Primitive "Kitchen Appliances"

By Henry A. Kortum Box 1107, Superior, Ariz.

The metate is one of the more common relics found around prehistoric camp sites and Indian ruins in the Southwest. This was the grooved or recessed stone in which corn, mesquite beans and various seeds were ground into meal. The mano or pestle was the small hand-held stone with which the corn, etc. was actually cracked, mashed and finally reduced to coarse flour. These were very important in the preparation of food in this climate where the usual method of preservation was drying.

The metates were not very portable. Anyone who has tried to carry one down from the top of a rocky mesa can testify to this. In fact, some of them weigh a couple of hundred pounds or more. There fore new ones must be made every time a community moved its permanent camp.

When searching for a rock to make a metate the person was naturally limited to what could be found in his-or her immediate locality. However, not just any old rock would do. In the first place it had to be hard enough to grind the grain without wearing out too soon and soft enough to be worked with the crude stone tools available. It must not be brittle. It had to be abrasive; a hard, slick, polished grinder would be useless.

In this area (Central Arizona) one of three types of rock were usually used. Rhyolite or dacite, sandstone and schist were preferred although I have seen one made of quartzite. The schist was evidently not too satisfactory, as nearly all found were broken or worn completely through. Those made of sandstone are quite small as larger slabs tend to break up easily. On the other hand a more durable sandstone was found in the Mesa Verde area of Colorado and there several grooves were made side by side in a slab of sandstone several feet long.

East of here in the Pinto Creek country a reddish granite was used. It must have taken much time and patience to work this stone, sometimes called "tombstone granite" because of its hardness but some of the best looking metates were made from it. In many casse the sides are parallel and regular with the ends squared off as it some one had taken a great deal of pride in their workmanship.

Near the Verde River in Yavapai county, Ariz. we found the prehistoric people liked a white granite. In one instance a number of grooves and depressions had been worn in the top of a boulder weighing several tons. This was without a doubt a permanent fixture.

However over most of the Southwest, the most widely used type of rock was basalt, obtained from the extensive lava flows found in this part of the country. Metates made of this material often had high boxed sides, rectangular grooves and occasionally short legs on the under side.

Some specimens were actually mortars having deep, round depressions in which pestles were used.

Manos of various shapes are often seen but one of the oddest I've come across belongs to a friend of mine. In size and shape the mano resembles a small grapefruit and the maker had carved vertical lines on it so that it looks like a muskmelon. It and the small, shallow mortar found with it, are made of pink sandstone. Southwest Colorado was the origin of this set.

Occasionally other materials were used but nearly all the metates and manos I've seen were made of the following: rhyolite, basalt, sandstone, and schist. Considering what they had to work with the prehistoric inhabitants did very well in the manufacture of household necessities.

Grieger's Air Condition

GRIEGER'S have installed a new C. E. Air Conditioner in their store at 1633 East Walnut Street, Pasadena, California. Customers may now shop in complete comfort during the hot summer months. Customers are invited to inspect their new and greatly enlarged jewelry parts department. Hundreds of sensational new jewelry mountings and parts are now being manufactured by GRIEGER'S to take care of the greatly expanded demand for baroque or tumbled gem jewelry creations. No effort has been spared to make Grieger's the store to shop in comfort and for every need in jewelry and gem cutting supplies.

An Interesting Quartz Crystal Location

CAPTAIN GEORGE W. OWENS

7500 Ellington Drive, Aero Vista, El Paso, Texas

Having completed the arranging of our cut stones and art in our recently acquired display case and while sawing some very nice agate a few days later, I suddenly felt the desire for a field trip. So after studying maps, books, and consulting the weather man, it was decided that a trip to the nearby Organ Mountains in New Mexico would make a nice Sunday afternoon drive.

There was a prospect that a few mineral specimens could be found on some of the old mine dumps that cover the area. Accordingly, plans were made for the trip - water jugs filled, jack and tires checked, extra oil and a fan belt for the motor loaded — all of the 1001 things normally accomplished for a field trip — and bright but not early the next day the Owens' set out to discover the Organ Mountains.

The drive from El Paso to Las Cruces was fast and pleasant. At Las Cruces we turned right, going toward Alamagordo. About twenty minutes later we could see the small hamlet of Organ. As we approached we could see evidence of past mining. Old dumps were visible on both sides of the road.

Stopping in Organ for a cup of coffee and information, we learned that we were welcome to look on the dumps along the North side of the road and that free copper, malachite, galena, hematite and various other interesting minerals were to be found if one was industrious.

Getting back into the car we proceded on up the highway a distance of approximately 400 yards and turned left, after opening and CLOSING a gate we drove onto the range a distance of no more than 150 yards when we parked the car just off the trail. Picking up our hammers and a couple of small bags we strolled up the small hill toward what appeared to be a series of old dumps.

Scattered over the sides of the hill were bits of quartz, specks of green stained rock, and in one spot, several milky quartz crystals were picked up. As we approached the dumps, some 400 feet from where we parked, I picked up a beautiful specimen of green garnet. A single crystal fragment showing eight faces — the piece is over a inch and a quarter across and the faces are most brilliant.

Arriving at the dumps I was amazed at the masses of minerals laying helter-skelter over the hillside. Actual boulders of green garnets and quartz litter the area. In no time at all my small bag was filled with green garnet, galena, small specimens of velvet malachite and other interesting material. Returning to the car for another bag, I noticed what appeared to be an outcrop of the original vein. On returning I stopped there and in a few minutes picked up several stained quartz crystals. These crystals were coated with a light stain of hematite and some of them had several extra faces. They were so interesting that I scratched in the dirt along side the outcrop and was soon recovering more of these crystals. The deeper I went, the more hematite was evident on the crystals. After digging down about 18 inches I discovered I was digging in a seam or vug in the outcrop and that the loose crystal were coming from the sides of the seam. Digging on down a few more inches I was rewarded with a splendid group of several crystals three to four inches long and coated on one side with large crystals of hematite. These quartz crystals could be termed facet quality material, they were so clear. The hematite crystals run up (or down) the side of the quartz crystal away from the wall and instead of being the usual stain, they were very pronounced crystals. In size they vary from 1/8 to 3/8 inches across and stand out from the quartz base about the same distance.

At first, their beauty escaped me as they were dirty and dust coated from my digging efforts. However, it wasn't long before I managed to break one in removing it from the wall. It was then that I discovered that the hematite was a beautiful russet red. In a short time I had removed over a hundred of these crystals.

They were from one inch to five inches long. Perfectly terminated, and all having the hematite crystals. The seam continued on without any evidence of narrowing and by digging on down in the loose material I could see even more crystals adhering to the wall, but it was getting late and time to be thinking of the drive home. So recovering the few crystals in sight that were easily removed and covering up the evidence of our work we returned to the car for the trip back home. On arriving back at the car with some excellent small specimens of malachite/azurite, green garnet, and a few of pyrite and galena, in addition to the crystals, we loaded the specimens and then enjoyed a cup of coffee from our thermos as we looked out over the area. Everywhere we looked were places that seemed worthy of investigation. Resolving to return in the near future to dig more of the crystals, we left Organ to return home.

Arriving home I hurried to clean several of the crystals. Those from the deeper area were brilliant and beautiful. It was a pleasure to add several of the best to our collection.

This trip was one of our best short field trips. Since it is so close to a national highway we didn't need the precautionary materials we usually carry in case of car trouble.

We are sure you would enjoy an afternoon in this vicinity and without doubt you would add to your collection.

Map showing the quartz crystal locality in Organ, New Mexico

World News on Mineral Occurrences

Items on new finds are desired. Please send them in.

Abbreviations: xl—crystal xled—crystallized xline—crystalline

ALABAMA — We are indebted to William M. Johnson, R.F.D. 6, Knoxville, Tenn., for the following note on Alabama:

"An excellent light marble is found in a belt 35 miles long extending from Coosa County thru Talladega and into Calhoun County. Most of the distance it is about ½ mile wide but at Sylacauga (Talladega Co.) it is 1½ miles wide."

ARIZONA — "Under separate parcel post I am sending you a couple of pieces that may be of interest to you. Both of these I collected last year. One is a specimen of large phenocrysts of kaersutite in the rock camptonite, both rare. Kaersutite is given in Dana's text-book as a titaniferous amphibole. The new system when it comes out will probably simply call it a titaniferous variety of amphibole." — letter dated April 19, 1954, from W. C. Oke. 9115 So. Harvard Blvd. Los Angeles 47, Calif." — (see Nevada for other specimen).

The kaersutite occurred as lustrous black phenocrysts (porphyritic crystals) in dark gray camptonite. Kaersutite was first found at Kaersut, Umanaks fiord, Greenland, which locality gave the mineral its name. The Arizona kaersutite comes from Hoover Dam, Mohave County.

A ¾ inch black cube of limonite pseudo after pyrite xl, in gray xline rock, and coming from the Plumose Mts., Yuma Co., Ariz., has been donated by Earl U. Mayer, 1753 "I" St., Yuma, Ariz.

ARKANSAS — The following letter dated May 15, 1954, comes from John O. Griesbach, 3400-13th St. S. E., Washington 20, D. C.

"My Dad sent me a nice gift recently of a fine doubly-terminated quartz xl, with at least 8 gas & water movable inclusions in it—from a 40 year old collection from Hot Springs (Garland Co.), Ark. The xl is 1½" in diameter and about 3" in length. A small intergrown xl on one side also contains a couple of bubbles. In the largest "bubble" are a large number of milky plates of loose quartz and finely divided silica "mud" which move about as the xl is rotated and turned end over end."

CALIFORNIA—Some nice little grayish xls of andalusite (chiastolite) with symmetrically arranged black inclusions have been received from C. J. Appling, 2106 Ferger Avenue, Fresno, Calif. The xls came from Daulton, Madera Co., Calif. The following letter, dated March 9, 1954, is also from Mr. Appling.

"We made a short trip on Sat. March 6th, to the old Daulton copper mine in the lower foothills of Madera Co. on a search for chiastolite. There were a great many of them there but owing to former visits by other hounds with noses for the same material we had to be satisfied with the best that were left.

"I am sending you a dozen small ones. Though small they are characteristic in everything but shape. In shape many are cubic prisms from one to two or three inches. long."

A specimen of rock crystal with inclusions of green chlorite have been received from the Ken Dor Rock Roost (the McClures), 419 Sutter Ave., Modesto, Calif.

"Here is a specimen of quartz with chlorite. We found them (not many contain the chlorite) at an old gold mine at Shingle Springs (El Dorado Co.), Calif.

"Shingle Springs is a very small town about 30 miles east of Sacramento and about 8 miles from Placerville. We dug them out of the old Crystal mine dumps but they are all gone now as too many collectors have been digging up there. Several years ago we got some lovely groups which had such a fine sparkle that even the clear crystals looked pretty. It is much fun to dig for them. I would rather dig for crystals than go to the finest picnic." — letter dated April 13, 1954, from Mrs. K. B. McClure.

COLORADO — Fine xline specimens of galena have been found in the gold-silver mines at Silverton, San Juan Co., Colo.

CONNECTICUT—The following letter, dated May 30, 1954, comes from Richard Schooner, Box 215, East Hampton, Conn.

"You should see the 4 x 6" specimen of reddish-brown triplite that I found at the Swanson Lithia Mine (Haddam Neck, Middlesex Co., Conn.). David Seaman (American Museum of Natural History) said that few museums have anything as good. I hope to find another one for the American Museum, though the quarry has been posted. I intend to discuss the matter with the owner. Much of the triplite is altered to a tannish-yellow mineral, not yet identified, and tiny crystals of what may be bermanite are present in a few examples. Tons of lepidolite are still in evidence.

"I recently secured one fine specimen of bright blue kyanite crystals in quartz, at the railroad cut just west of the highway bridge on route 6A, in East Hampton (Middlesex Co.), Conn.

"Some rather good torbenite and gummite, as well as fair cyrtolite and bismite, have been collected at one of the old case quarries in Portland. Epidote, in granular masses and in good green crystals, has been obtained at a small new road cut near those quarries. Poor sphene is also visible there.

"Did you know that masses of weathered sphalerite at Mine Hill, in Roxbury, Conn., are often incrusted with white or gray hydrozincite, which fluoresces in a good blue color under the short-wave Mineralight?

"I should have mentioned the fact that the Strickland quarry is being completely pumped out, so it ought to remain active for quite a while. I certainly hope so, although no dumping is being done at the surface. Some very bright lepidolite was encountered, about a month ago."

DELAWARE—Small gypsum xls have been found in clay that was dug out of a dredged canal at Summit Bridge, New Castle Co., Del., so we have been informed by Leonard A. Morgan, 217 So. Atlantic Ave., Haddonfield, N. J.

DISTRICT OF COLUMBIA — The following item, dated May 15, 1954, is sent in by John O. Griesbach, 3400-13th St., S.E., Washington 20, D. C.

"On a couple of local rambles up a nearby creek, Oxon Run, with the children, we have found a number of limonite-goethite geodes — not much good but interesting, also some small but nicely formed magnetite xls in a quartz-rich gneiss. All float material, nothing in situ.

"Oxon Run is in the extreme southeastern section of D. C., in an area known as Congress Heights. The stream itself has its origin in a small lake in the Oxon Hills cemetery, on the D. C.-Md. line. It is about 4 miles long and flows S.W. just within the D. C. boundary toward the Anacostia River.

"Another little note of interest. In several of the muscovite and quartz schist outcrops which occur in Rock Creek Park (in D. C.) are local concentrations of garnet. These are not generally of good form, being poorly xled, and usually between 1/16 to 1/8" diameter, but up to ¼" diameter in the largest xls. They are deep red-brown in color, and probably are one of the iron-garnets as there is considerable other dark colored, green to black fine grained hornblende in the schists also.

"The largest of the limonite and goethite geodes I have found thus far along Oxon Run is about 6 x 8" — they occur in a coarse conglomerate which is cemented, largely, by limonite."

FLORIDA — The following letter, dated March 24, 1954 was sent in by Mrs. John Roder, who formerly resided in Toccoa Falls, Ga. Her present address is unknown, as she is now on a long auto trip which is taking her through many states.

"We just returned from our Florida trip and want to get the rest of the story to you before some thing interferes. We started out late in January first going to Edisto Island on the coast of South Carolina just below Charleston. Here I'll skip all the shells and other marine life we collected and just mention a very nice specimen of yellowish-white quartz xls on limestone. Only the one specimen but thrilled to find it.

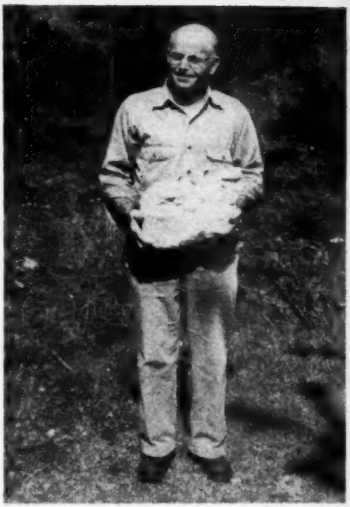
"Followed the coast south and found nothing in the way of rocks or minerals. We missed one collector on the way down the East coast. Found a large piece of brain coral about 14 inches in diameter. My husband accused me of starting to collect shells but it was only a substitute for lack of rocks. All the way to Key West and back up to Tampa before we found anything. Spent a month at Tampa collecting the agatized coral and visiting mines.

"A little over half of one head of coral is filled with clear quartz xls. Several with just the smooth agate and one with what looks like a cave with stalactites and stalagmites all thru it. Also found a number of agatized shells in transparent amber.

"In the phosphate mines near Bartow we found many petrified Manatee bones and tusks and fossil shells. One whole shell round and four inches long which we prize.

"Moving on to Ocala, Fla., which I already wrote you about but will add this. The limerock mines there produced many fossil shells, again a number of whole ones which we prize. Also fossil vertebrea 7-8 inches in diameter and any number of petrified pieces of bones. In these mines there seems to be a lot of huge pieces of what they call flint. Some quite attractive but nothing outstanding. Also a petrified sea biscuit from that area.

"In the same place where we located the large geode (see Mar.-April 1954 R & M, p. 255) there were other huge boulders which had beautiful fossil shells and some spots of what might have been remains of a cavity lined with very fine drusy quartz. Brilliant white, tan, brown and shades. The boulder which contained the geode had no shells in it, at least we found none. One end which was broken was no doubt 2-3 inches long. The top end was broken off and surrounding area quite badly fractured. It was in trying to get these broken pieces out that we discovered what it was and really started digging. No way of knowing how much larger it was at that end. A new road was made there a year or more ago and it would seem that these big rocks were piled up there at that time. Altho part of the surfaces seem to have been exposed longer.



John Roder holding the large geode found a few miles south of Ocala, Fla.

The mine supt. were very kind and cooperative and interested in helping all they could. Also we enjoyed the Rockhounds along the way. In all the trip was one thrill after another and very profitable. The first time we have had the opportunity of doing any real hunting and very thankful for what we found. Itching to be gone again."

GEORGIA — Grayish, translucent xls of selenite have been found in a road cut 2 miles N. W. of Cusseta, Chattahoochee Co., Ga. (on road to Columbus).

IDAHO — Greenish rounded masses of prehnite, with calcite, in dark gray basalt and coming from the Lost River district in Blackfoot, Bingham Co., Idaho, have been donated by Clarence Martin, R 3, Blackfoot, Idaho.

ILLINOIS — A recent letter from R. W. Nutting, 38 Forrest Drive, Pekin, Ill., carries the following item:

"We have found a couple of small geodes containing small quartz crystals in Lick Creek where route 29 crosses it (in Illinois). Also we found fossils in a compact variety of limestone. One of the fossils responds white under long wave."

INDIANA — Dark brownish xl masses of sphalerite with white calcite in geodes, have been found in a creek bed in Salem, Washington Co., Ind.

IOWA — J. W. Sinclair, P. O. Box 85, Marion, Iowa, recently sent in the following item. It was clipped from an Iowa paper (name unknown) but dated Nov. 1, 1953.

"Tipton (Cedar Co., Iowa). A Paleozoological treasure has been taken from the sand of the Cedar river near Rochester, a few miles south of here.

"Guy Osborn, operator of the Osborn Sand and Gravel Company of Rochester, reported that his sand dredge, working 40 feet below the surface of the water, brought to the top a 28-inch long section of what appeared to be the tusk of a giant animal from prehistoric times.

"Brought to Tipton, the tusk-like piece was displayed at the office of the Tipton Conservative, whose editors asked the University of Iowa for help in identifying the piece.

"Prof. William Furnish of the SUI Geology department came here Friday and identified the piece as a section from the tusk of a wooly mastodon which may have roamed these parts as recently as 30,000 years ago.

"Prof. Furnish, a former Tipton resident, said that the piece was the largest section he had ever seen. It measured about eight inches in diameter, weighs a possible 50 pounds.

"Using the dimensions, Prof. Furnish calculated that the whole tusk was problably 12 feet long and may have weighed as much as 500 pounds."

KANSAS — The following note was sent us by A. C. Carpenter, 419½ Main St., Ottawa, Kans.

"Cone-in-Cone. This interesting and mysterious formation is found in a good many places in Central Kansas. One good place is in a bluff on the W. side of the roadway between Kanopolis Dam and Langley. See if you can figure out how it was formed. There are also some selenite crystals here. This is ½ mile N. of Langley or 3⅓ mile. S. of Kanopolis Dam. Langley is on #4 state highway in the SE corner of Ellsworth Co."

KENTUCKY—O. P. McMican, P. O. Box 1793, Prescott, Ariz., made a short trip last May to the fluorite mines of Kentucky and Illinois where he collected a number of specimens. His trip was described in the *Yavapai County Messenger*, Prescott, Ariz., Thurs. May 27, 1954, as follows:

"O. P. McMican, member of the Yavapai Council, ASMOA, and of the Yavapai Gem and Mineral Society, returned just recently from a trip to Kentucky.

"While in Marion, Kentucky," he said, "I was taken to see several fluorspar operations. Two of these were located near Mexico, (Crittenden Co.) Ky. The Pennsylvania Salt pilot plant at Mexico had as its superintendent La Mont West, formerly with American Smelting and Refining company, and well known in Prescott mining circles.

"From there I was taken to the Kentucky Babb Mine near Salem (Livingston Co.,) Ky. A high grade fluorspar body has been found there between 400 to 600 feet level. This mine will be in operation this fall."

McMican crossed the Ohio River at Cave-in Rock, Ill. This cave, once a

pirate refuge, shelter of murderers and thieves, is now the site of Sunday school picnics. It is part of the 60 acre Illinois park overlooking the Ohio river.

Cut in a limestone bluff overlooking the river, the cave is 25 feet wide, 15 feet high and 150 feet long. Geologists believe it was formed by water which periodicaly empties out of big sink holes and drains through underground channels.

McMican then went to Rosiclare, Ill. "I visited," he said, "the mine of the Aluminum Corporation of America (employing about 350 men) which produces about 1,000 tons of fluorspar a week. I was lucky enough to pick a few select specimens of fluorite, while on the Illinois side of the Ohio."

LOUISIANA — We are indebted to Louis F. Rodrigue, Raceland, La., for the following rattlebox.

This rattlebox is a 2½ inch diameter brown limonite geode. It is a nice clean specimen whose surface is encrusted with many quartz pebbles (many are small gray chalcedony). This is the finest rattlebox we ever saw, not only for its attractive appearance but also because it rattles so easily—pick it up and it begins to rattle. Ordinarily, rattleboxes contain sand which have to be shaken close to the ear to hear them rattle; but this specimen must contain pebbles as the rattle is distinct and loud.

"Mr Donald Cameron of Colfax, La., who was kind enough to donate the specimen to me, informs me that it was collected in a gravel pit in Sec. 36 of Grant Parish, La. The gravel pit is approximately 140 feet high." — letter dated April 23, 1954, from Mr. Rodrigue.

MAINE — From Daniel S. Barker, Calhoun College, Yale University, New Haven, Conn., comes the following letter, dated May 3, 1954.

"In the excellent March-April issue of R & M, on page 148, David M. Seaman writes "Spinel—is extremely rare in pegmatite if it occurs at all."

I would like to question this, a minor point in what promises to be one of the most valuable series of articles you have yet printed, on the grounds of my own experience. Surely some other collectors beside myself must have found spinel in pegmatite.

"I write this because around the 20th of August, 1953, at the famed old Mount Apatite locality, Auburn, (Androscoggin Co.) Maine, I had a part in the discovery of five specimens of well-defined, one-inch modified black octahedrons in orthoclase. Specific gravity has not been checked closely, but luster, color, and hardness check closely with spinel.

"Furthermore, the crystals have been identified by members of the Yale Geology department as being spinel. Slight translucency on the edges allows a rich blue-green color to be seen in transmitted light. I must add that these specimens were found within a 20 foot radius a very little way under the surface of the well-examined dumps. Spinel, to my meager knowledge, is not listed from Mount Apatite in any publication, so this discovery is even more significant to me for this than because of the excellence of the specimens themselves (two are nearly whole octahedral crystals in matrix, three others contain several badly battered crystals with three or more clearly-defined faces.)

"I hope someone can back up this story with the discovery of more spinel there!"

MARYLAND—Miss Helen MacLeod, 4826 Butterworth Pl., N. W., Washington 16, D. C., sends in the following item.

"A titanium mine is planned for the vicinity of Cove Point, Calvert Co., Md., near the Calvert Cliffs, by the Titanium Ores Corp."

Apparently the sands there must contain considerable amounts of ilmenite or rutile or both.

MASSACHUSETTS — Veins of black lustrous basanite (quartz) ⅛ & ¼ inches thick, in a dark grayish-black fine grained mica schist, have been received from Ernest H. Fisk, West Chesterfield, Mass. His letter, dated June 14, 1954, reports on the mineral's locality.

"Recently I found beyond the Westfield River which flows by my home in West Chesterfield (Hampshire Co.) a rock which seemed interesting. This is a sort of gray rock containing a rather odd black mineral filling seams in this gray rock. I am mailing you a specimen (3 x 3") and would be pleased if you would identify it for me."

MICHIGAN — From Rian's quarry, near Felch, Dickinson Co., Mich., we have a nice specimen consisting of dark green actinolite xls with pale pinkish coarse xline calcite on massive actinolite. The specimen was donated by W. P. Pratt, 116 N. Alexander Ave., Claremont, Calif. Mr. Pratt personally collected the specimen several years ago.

MINNESOTA — Gray pebbles of oolitic quartz have been found in a gravel pit near Wabasha (on the Mississippi River), Wabasha Co., Minn.

MISSISSIPPI — Sharks' teeth occur at Barton's Bluff on the Tombigbee River some 12 or 15 miles above Columbus, Lowndes Co., Miss.

MISSOURI—The following was sent in by A. A. Castile, of Associated Miners, 6972 Sheridan Rd., Chicago 26, Ill.

"Lead float is not uncommon in the beds of smaller ditches and creeks in Missouri; and banded chert, which I note some of your readers collect, is common throughout l o w e r Jefferson County and particularly abundant about De Soto. Some of this material contains seams and patches of agate. A particularly fertile location is the first creek bed crossed by the gravel road east out of De Soto toward the old Hilliard Castile farm. Much of it is fossil replacement."

MONTANA — Very fine specimens of Iceland spar have been found at Big Timber, Sweet Grass Co., Mont. Iceland spar is a colorless variety of calcite which shows strong double refraction.

NEBRASKA — About 1928, a stony meteorite was found near Cotesfield, Howard Co., Nebr. The largest mass weighing 1160 grams (2 lbs. 9 oz.) is in the collection of the Denver Museum of Natural History, Denver, Colo.

NEVADA — "Under separate cover I am sending you a couple of pieces that maybe of interest to you. Both of these I collected last year (the first is kaersutite from Arizona, which see.)

"The other specimen is of huntite, a magnesium-calcium carbonate, written up in the Jan.-Feb. number of the *Amer. Min. of 1953*, the Walter Hunt number and named for him. Collecting this entailed a 2½ mile hike uphill at around 7,000 feet elevation, the road having been washed out by a cloudburst. Crippled with arthritis as I am it was a real chore I can assure you." — letter dated April 19, 1954, from W. C. Oke, 9115 So. Harvard Blvd., Los Angeles 47, Calif.

The huntite is a white fine grained powdery mass in vugs of a buff colored matrix consisting of deweylite and magnesite.

NEW HAMPSHIRE — Fine little smoky quartz xls, often in groups with needles of riebeckite, have been found in Conway, Carroll Co., N. H.

NEW JERSEY — Egbert McElroy, prop. Monroe Mineral Store, Monroe, N. Y., sent us recently 2 clippings. One clipping described the finding of mastodon bones dredged from a small artificial lake (Ohberg's Lake) at Vernon, Sussex Co., N. J., last February.

The 2nd clipping relates to the finding of what may be New Jersey's largest cave. The find was made by Lawrence O. Chapman, 41 Church St., Franklin, N. J., who is a member of the Northern New Jersey Grotto of the National Speliological Society. The cave lies on the Henry Paulison farm, just west of the Franklin Borough line (Franklin, Sussex Co., N. J.)

Mr. Chapman is a member also of the R & M Asso.

NEW MEXICO — "I took the liberty of sending you small samples of two interesting minerals we ran into down in the depths of the old copper mine in Golden (Santa Fe Co.), N. Mex. These

came from the same level but in separate little pockets maybe 100 feet apart.

"One specimen is a Japanese Twin (heart-shaped) of quartz. The other has a few little balls made up of plates of specularite scattered amongst some pinkish hemimorphite xls. I did not have the time and patience to run down the latter but my friend, Jerry Lapham, of Glens Falls, N. Y., identified it as hemimorphite.

"If I ever get the time I ought to write up something about the many minerals to be found in this mine.

"In our own collection we have a really super group of the Jap twins and someday I shall get it photographed for you." —letter dated April 12, 1954, from Walt Wright (Adobe Crafters), Rt. 2, Box 341, Santa Fe, N. Mex.

The specularite (hematite) is in small rounded masses consisting of brilliant black thin plates associated with pinkish hemimorphite xls and slender rock xls.

The other specimen is a group of small rock xls with a brownish tinge, some showing beautiful Japanese twins.

NEW YORK — The following letter, dated March 8, 1954, should have been printed before but in someway it got mislaid. It is from Robert M. Eaton, 54 Heberle Rd., Rochester 9, N. Y.

"Kindly find enclosed (letter was attached to box) samples of the minerals that I would like to advertise in your next issue of R & M.

"Two of them are from the Penfield quarry in the town of Penfield (Monroe Co.), N. Y. The first is a selenite, waterclear cleavages; the second, dolomite xls on limestone. The last specimen is wollastonite with garnet and diopside from Willsboro (Essex Co.), N. Y."

The three minerals received are unusually fine specimens. The two from the Penfield limestone quarry are a group of beautiful white dolomite xls on dark gray limestone, and 2½ x 3½ x 1½ inches thick beautifully transparent selenite platy mass. The last specimen comes from the famous wollastonite quarry in Willsboro and it consists of white xline wollastonite with brown garnet grains and gemmy, green diopside grains.

NORTH CAROLINA — Rev. C. W. Ervin, Sparta, N. C., wrote us recently that a rich gadolinite strike has been made near Helton, Ashe Co., N. C. (close to the Virginia line). The deposit is so rich that it will be mined by the H and H Construction Co. of Clarksburg, W. Va., and the product will be sold to the Atomic Energy Commission.

NORTH DAKOTA — We can use some notes on North Dakota minerals. Please send them in.

OHIO — "Here are a few items of interest to your readers of World News on Mineral Occurrences. All these localities are in Ohio.

"Brucite — has been found by me in the Woodville (Sandusky Co.), Ohio area. The specimens are very few in fact only three. The preservation of the crystal structure is in good detail, showing hexagonal crystals with a white pearly luster.

"This is one of the rarer minerals of Ohio being a hydrate of magnesium. These small crystal groups associated with aragonite are approx., 4" x 5"—this is the first known occurrence in Ohio These specimens have been turned over to the State.

"Sphalerite, Galena, Chalcopyrite—all have been found in association with each other as small crystal masses approx. 3" x 4"—replacing fossil crinoid stems, or leached out places in the concretionary masses of the Logan formation—Middle Mississippian—in Ashland County, along the Black Fork of the Mohican River. Also a few calcite septarians can be found by the diligent collector along with some galena septarians.

"Some of the calcite is pink—sometimes, the galens has replaced the calcite.

"I'd like to give special mention to the finding this year of the millerite hairs in the Saluda Limestones and marbles of the Cincinnati (Hamilton Co.), area.

"The small delicate greenish, bronze or whitish hairs can be found in as-

sociation with the calcite linings of some of the gigantic coral colonies of the Upper Ordovician rocks.

"Any of these fossil corals, which attain the large size of 3 feet across, yield fine crystal masses of the following:

"Blue Celestite with pink dolomite crystals, aragonite sometimes lining the cavities also.

"The orange dolomite "saddles" can be found laying on a bed of clear calcite sometimes.

"The calcites are pretty in themselves being in a great variety of colors. The colors of these calcites are delicate shades of pink, red, brown beige, also white and clear.

"Any fossil coral colony should pay off by cracking them open anywhere in the Whitewater formation of which the Saluda is a member.

"I have noted all these in the field myself and have had competent people say that these crystal localities and their contents are, what they are."—letter dated June 15, 1954 from J. J. Hoppinger, Society of Economic Paleontologists and Mineralogists, 11720 Edgewater Dr., Lakewood 7, Ohio.

OKLAHOMA—Black xls of enargite on white to amber calcite xls have been found in the lead-zinc mines at Picher, Ottawa Co., Okla.

OREGON—Large compact masses of greenish earthy glauconite have been found in Huntington, Baker Co., Ore.

PENNSYLVANIA — "On the last Saturday in April, the Mineral Shoppers' Guide tracked down a report on a "hot" radioactive find in Pike Township (Oley Valley) in Berks County, Pa. The report was traced to its origin on the farm of Mr. Jonathon Rohrbach, near Lobachville, in Pike Township. The pit from which iron ore had been mined many years ago (precambrian Granite Gneiss with magnetite, ilmenite, possible zirconium, possible allanite, hornblende, limonite and hematite) is still a potenial ore deposit. A hasty check shows a few over-background scintillations in pieces of greyish quartzite on which deep colored biotite mica is in evidence. Spot selected pieces of rock and ore have been submitted to Mr. Charles B. Owens, of Philadelphia for further check. There is little doubt that radioactivity exists in this region to an interesting though not to any commercial extent. However, the iron potential should be investigated by core drilling. Extremely heavy magnetite samples are all over the area, mostly from old and casual new digging by the owner. Also, in Pike Township and near Lobachsville, is a new cut along the road with an interesting exposure of pink feldspar, quartz, epidote, and chlorite rock which resembles unakite. The epidote is predominate in some pieces with the pink feldspar and pale green epidote running in small to one inch or better alternate lenses or veins. In some pieces, the pinkish feldspar is predominate and in others a greyish quartz and pink feldspar are equally distributed in fine to coarse masses. Moderate to successful lapidary work has been done on this new "unakite" in spite of some undercutting in some sawed pieces. Careful selection of material at the new locality may produce fancy cutting material. To the best of our knowledge, this material has not been reported for this area up to this time. At this writing, it is too soon to tell how valuable this material may be for the lapidary. In any case, it is no more porous nor weak in structure as the southern variety of the material generally termed Unakite." letter dated May 5, 1954, from Chas. A. Thomas, 706 Church St., Royersford, Pa.

RHODE ISLAND—White translucent xls of apatite were found some years ago in a road cut just west of the town of South Foster, Providence Co., R. I.

SOUTH CAROLINA — Black xls of polycrase have been found near Marietta, Greenville Co., S. C.

SOUTH DAKOTA—A nice pure mass of pyrrhotite was donated a few months ago by John P. Connor, Box 522, Armour, S. D. He found the specimen on an old mine dump in Deadwood, Lawrence Co., S. D.

TENNESSEE—An unusual form of thaumasite was discovered a few years ago in the Isabella copper mine at Isabella, Ducktown, Polk Co., Tenn. The mineral was found as white needle-like xls in vugs of iron sulphides.

TEXAS—Last year we received notice of a most unusual celestite that had been found by T. R. Havins, Box 25, Brownwood, Texas. The item was never printed as we were waiting for a photo; the photo has arrived and it is a pleasure to print the item below (dated June 2, 1953).

"Knowing your interest in fine mineral specimens, I want to tell you about a most unusual one I have recently collected.

"It is the most unusual celestite I have ever seen. It is the only specimen I have ever viewed that carries all types of crystals of this mineral. At the base is a layer of fibrous crystals ¾ inches in length. These crystals are about the size of a sewing needle and have a fine, blue color, studded here and there over the specimen are transparent pyramids which measure ¾ inch; likewise many, fine, characteristic, tabular crystals, some of which are transparent. In addition the specimen is loaded with perfect and near perfect prisms, which measures up to ⅝ inch. As you know there is a difference of opinion among Mineralogists whether rhombohedrons occur in the barite group. My specimen proves the point, I have rhombs measuring ½ x ⅜ inch sticking all over this specimen. Thus you see it carries five distinct types of crystals.

"This piece measures 11 x 5 x 5. I found it as part of the lining of a cavity that was about the size of a half bushel measure. In all I took out over twenty fine pieces but only this one carries all the crystal types."

A 2nd letter, dated April 2, 1954, reads:

"Enclosed is a close up of the celestite specimen about which I wrote you last summer. This is a much better photograph than the snap I sent you.

"This specimen comes from four miles northeast of Zephyr, Texas, in Brown county. The deposit is near the base of the Edwards Limestone of the Cretaceous geology.

"The fibrous (blue) xls of the specimen do not appear in the photograph. The xls that do appear rest on the fibrous layer at the base."

The photo of this unusual celestite appears on the front cover of this issue.

UTAH—Howard V. Hamilton, 115-B E. Adams St., Vandergrift, Pa., reports the finding of two interesting minerals in the Blowout Pit on Iron Mt., Iron Co., Utah. One is metastrengite (phosphosiderite) which occurred in peach blossom pink masses. The other is rockbridgeite which is in dark blue almost black tiny xls in and on magnetite. The specimens had been found by Mrs. H. K. LeSuer of Cedar City, Utah, shown to Mr. Hamilton while on a recent visit to Utah who in turn had them identified by Dr. Clifford Frondel of Harvard University.

VERMONT—Lazulite was found some years ago in thin blue veins in quartzite at Chittenden, Rutland Co., Vt.

VIRGINIA—The following item was received recently from Miss Helen L. MacLeod, 4826 Butterworth Pl., N. W., Washington 16, D. C.

"The New Jersey Zinc Company has bought the mine at Mineral (Louisa Co.), Virginia and is going to reopen it.

Abandoned since mayby War I.

It was once a large mine sometimes used for iron and sometimes for sulfur as conditions dictated.

The buildings will have to be replaced as they are completely decayed, looking like something from a Bela Lugosi movie.

There is so much pyrite around that all mineral specimens are rotted by the acid and crumble at the touch and the puddles are full of chemicals which deposit bands on broken glass which make it look vaguely like agate."

WASHINGTON — Pure white, coarsely xline veins of calcite occur in the celestite deposits at La Conner on the southeast corner of Fidalgo Island in western Skagit Co., Wash.

WEST VIRGINIA—Interesting specimens of calcified logs were found some years ago in a bituminous coal mine in Monongalia County, W. Va., (at Barker, near Morgantown).

WISCONSIN—Lutz limestone quarry at Oshkosh, Winnebago Co., Wisc., is noted for its marcasite and pyrite—both occurring in beautiful iridescent xls.

WYOMING—Banded red pebbles of agate have been found at Hanna, Carbon Co., Wyo., by Charles W. Wight, 46 Queens Ave., Stratford, Conn.

ALASKA — During the last World War, Frank Mancuso, 723 Hudson Ave., Peekskill, N. Y., was working for the Government up in Alaska. On one of his jobs he had to fly from Nome north to Pilgrim Springs (with some equipment) and in so doing he went over the Grant & McDonald gold mine which was about 100 miles north of Nome, Alaska. Later, having a few days to himself, he visited the mine (a placer operation), obtained perminssion to do some panning, and was successful in collecting 8 nuggets and lots of small grains. This was in 1944.

In March of this year, Mr. Mancuso presented one of his nuggets to the Editor of R & M; this ½ inch yellow nugget weighted 14.02 carats.

ANGOLA—"Thanks ever so much for your prompt and considerate response to my letter and specimens offering. In appreciation thereof—lo and behold—more specimens, albeit nothing very rare or fancy. Zinc ore with mebbe a piece of copper—zinc stuff included (from Portuguese Angola), one solitary chunk of manganese from the Gold Coast; couple of chunks of calcite with some black stuff from a harborside quarry in the Belgian Congo; and there would of been a chunk of magnetite from Liberia if I hadn't gone and forgot to pick it up along with the rest of my stuff where I had it stored at my sister's place; too lazy to go back and get it. The manganite wasn't too easy to come by. I had to comb tons and tons of dockside ore piles to find just a few pieces. No manganese showed up in the ore piles in Angola.

"Sparse picking, you would say, for a six months sojourn on the West Coast of Africa—and for a fact, but not because I didn't try. Tho I hopped a bicycle and hit the highroad in most of the ports we docked at. There just didn't seem to be much stuff around, or accessible — excepting for the occasional ore piles on the docks and what I was able to hack out of the breakwaters near by. I couldn't get my hooks on a scrap of uranium ore even though we took it aboard as cargo —in closely sealed and guarded drums, and the only copper that I could find (speaking of the Belgian Congo here) was the little scrap stuff (smelted of course) that you see included. Not very much mining done in W. Africa—not in proportion to resources they say,- and mining there is carried on too deep in the interior for a common seafaring rockhound to come by. Further more, what I could get hold of, had to be kept within very modest limits as I did not want to be bothered too much with transportation problems when I get back to the states, and what I am sending you are just about all that's left of the scraps I brought back after a couple of other rockhounds got thru picking it over. Anyway you can say that you got some souvenirs from the West African hinterland, as long as you won't look too closely into the mouth of the gift horse. I didn't visit Sierra Leone; and tho I did get to the Cameroons, the stay was short and as far as I could see no ore was being shipped out, just logs and cocoa." —letter dated July 4, 1953, from Walter McNamara, 7 Harmony St., Danbury, Conn. Letter held up from printing as ws were awaiting for more information which took time as he went back on another long trip, as he is a seaman in the Merchant Marine.

One specimen received was drusy, brownish calcite on compact, buff-colored limestone. "Is from the harbor area of Luanda, Angola"—from letter dated May 24, 1954.

The calcite fluoresces yellow under long wave light.

CANADA—An interesting specimen was received a few months ago from Wm. Dawson, 512 Sheridan Drive, Niagara Falls, N. Y. The specimen is a section of a large chocolate-brown apatite xl whose interior is studded with whitish calcite xls and dark purple fluorite xls—the locality is Tory Hill, Ontario, Canada.

ENGLAND—Fine xls of scheelite of a rich yellow color have been found in the Wheal Friendship mine, near Tavistock, Devon, England.

GERMANY—Pale green encrustations of prehnite coating large colorless calcite xls, from Rauschermühle, near Kaiserslautern, Germany, have been received from Werner Lieber, Hubschstr 24, Karlsruhe, U. S. Zone, Germany.

MADAGASCAR—The following item has been received from H. Besairie, Service Geologique, B. P. 280, Tananarive, Madagascar.

"Thorianite was first discovered in Madagascar by Professor LACROIX, in alluvial deposits in the province of Betroka.

"Since H. BESAIRIE collected in 1947 a fine sample of this mineral in the pyroxenite of Soafia, near Behara, many occurrences of uranoan thorianite, have been recently reported in this area.

"The matrix is generally phlogopite and spinel pyroxenite, (diopside), and sometimes pegmatite at the contact with pyroxenite. Very large crystals for the species have been collected, up to two inches on an edge, and weighing over two pounds (G = 9.2) Crystals have a cubic facies, forms are generally a (001) and o (111). Penetration twins on (111) are frequent: the trapezohedron face m (311) most common on Betroka samples, was not observed.

"A new occurrence of the rare mineral sapphirine has been reported by H. BESAIRIE at 15 miles south of Betroka, on the hill of Vorokafitra, The mineral is widely disseminated in a phlogopite metamorphic rock, best crystals being packed in phlogopite crystalline aggregates.

"Crystals have a fine sapphire-blue color, some of them being of gem quality, although cracked. Good crystals are generally small, less than 1/4 inch wide, but crystalline aggregates may weigh over a pound. Crystal have a tabular habit, the equal development of predominant faces (110) and b (010) giving an hexagonal facies. They are accompanied by large crystals of pink and blue corundum."

SCOTLAND—When a road cut was made in West Ferry Hill (Erskine Parish), Renfrewshire, Scotland, some years ago, some fine specimens of amethystine quartz and agate were found.

SOUTH AFRICA—Last year, Edward Graf, P. O. Box 1432, Paterson, N. J., made a flying trip to South Africa and while there collected many interesting minerals. A specimen sent R & M was a granite containing rusty-black grains of magnetite.

"This was taken from a mountain in Natal (South Africa), a section known as the valley of a thousand hills, about 50 miles west of Durban. There was a lot of this which had washed across the road during heavy rains, quite hard when dry and contains a little magnetic material in it." — letter recently received from Mr. Graf.

SPAIN—A nice loose 6-sided translucent aragonite xl has been received from Juan Montal, Plaza Sgdo. Corazon No. 1, Villafranca del Panades, Spain. The locality for the xl is Monterde, Zaragoza Province, Spain.

SWEDEN—A nice cleavage of brownish orthoclase, from Ronneby, Blekinge Province, Sweden, has been received from Gerhard Koppin, Skanegatan 3, Nybro, Sweden.

IDAR—OBERSTEIN, GERMAN GRINDING CENTER

By WERNER LIEBER
17a Karlsruhe, Germany, Hübschstr. 24

Sometimes one reads in this magazine the name of a little old town which is the main center of the German grinding and jewelry industry. Now I would like to talk a little bit about this jewelry town at the Nahe river. Let's pay a short visit to such an old agate cutting mill and a modern grinding plant.

Idar-Oberstein is situated at the southern edge of the Hunsrück mountains. In the melaphyric and porphyric rocks one can find many interesting minerals such as agate, jasper, quartz, amethyst, zeolites and beautiful calcites. It dates back to Roman times when the agate was discovered. The material of many antique gems stored in different museums was inspected and found to be agate from Idar-Oberstein rocks. The discovery of agate caused those who found it to grind the material at the very place of the discovery, and so one can say the the Idar-Oberstein grinding industry is almost 2,000 years old. In our times nobody can imagine how primitive the lapidary outfit has been, used in those days.

During the middle-ages they built cutting mills driven by water power. The oldest written documents referring to the digging of agates date back to 1454. From that time on the industry and trade grew by leaps and bounds. Then during the middle of the past century the sources of domestic agates were practically used. Later on, great mines of agate were discovered in Brazil and Uruguay and the material was brought to Idar-Oberstein to be ground there.

Now, let us visit the old German mines where agates have been dug through several centuries. About 4 miles west of Idar-Oberstein you will find the former mines. There are about 40 adits, most of which are weathered now. A hunter with an open eye can collect here some amethyst, smoky quartz and agate.

In former times the agates were brought down to the cutting mills, which were built along the little river. To-day one has but rare occasions to find some of those old romantic cottages. They have been declared historical monuments. Here lie the grinders on pedestals in front of great sandstone grinding wheels which have a weight of almost 4,000 pounds.

The products of the agate industry are such as vases, ash-trays, plates and many other useful house-hold items. The material being very hard, the work is a rather tough one and needs a high measure of experience and skill. First a fitting piece has to be cut out of the raw material which is supposed to show a nice pattern.

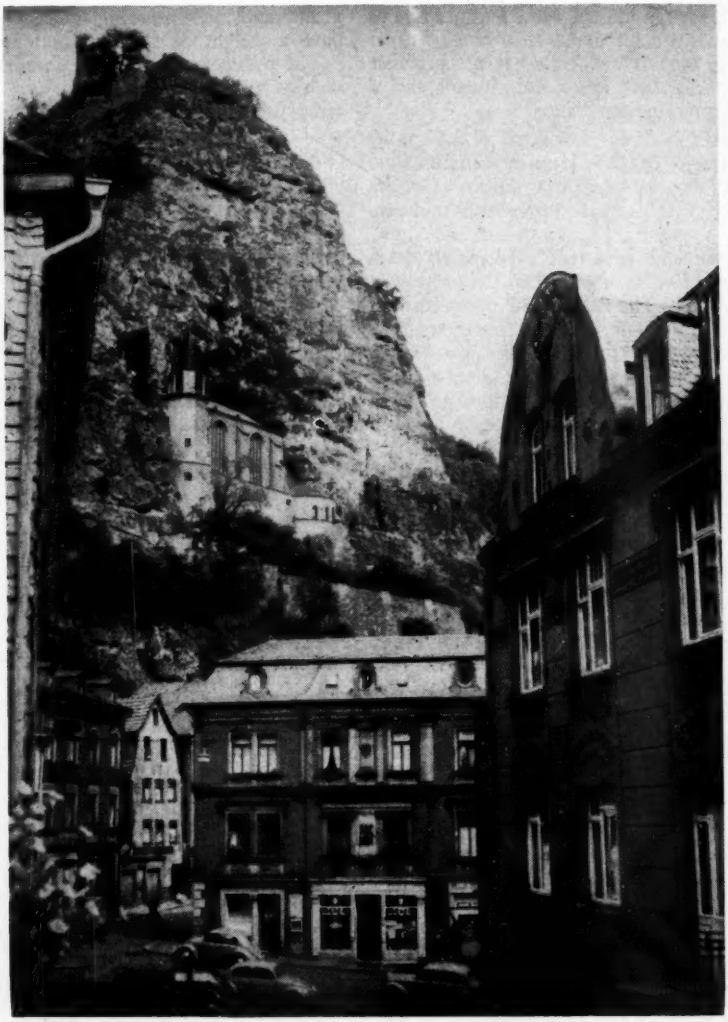
In this case men can help nature by means of treating the stone with syrup or honey and concentrated sulfuric acid or by dipping the pieces into solutions of the most various colors. Because many layers of the agate are porous while others are not, such a stone can be treated with syrup, which will go deep into the holes of the porous material. After some weeks the stone is put off the syrup and dipped into concentrated sulfuric acid. This acid burns the sugar and the former ugly gray layers now turn into deep black. In this way a most beautiful onyx comes into existance! Of course such facts are supposed to be kept secret and are usually not published at all.

After the cutting of the agate with one of the frequently used diamond saws, the piece will be ground with sandstone wheels of the most various sizes and then the stones are polished with a hard wood drum which has the polishing compounds on it, such as chromium oxide, tripoli powder or others.

The agates as well as the amethysts and quartzes being used to-day come from Uruguay, Brazil and sometimes from Madagascar. It is too bad that the once flourishing industry can not fully develope because of the import inhibitions. Before the war plenty of jewelry as aquamarine, zircon, garnet, opal, sapphire, ruby, diamond and so on was imported from all over the world, cut, ground and polished in Idar-Oberstein and then

exported again. Nowadays many foreign countries are supplying Idar-Oberstein with raw material again, so many working places in the bijouterie factories can be occupied again.

Let's take a fast look at one of those jewelry grinding plants to-day. Here we see the grinders at long tables in front of rotating disks out of lead or copper alloys by means of which the precious



Part of Idar-Oberstein, Germany, with the church which is chiseled into the rock. This church is the sign of Idar-Oberstein.

stones are ground and polished. The cut pieces are puttied on small wooden sticks. Immediately besides the rotating wheels we find a square wooden plate with plenty of holes in it. The grinder holds the sharp end of the stick in one of the holes and the blunt end with the stone on the wheel which is covered with polishing compounds. What ever hole he uses he gets a blunt or sharp angle at the stone.

In the little city of 26,000 inhabitants today we find 460 agate cutting plants, 480 precious stone grinding plants, 220 diamond grinding plants, 150 agate borers and 100 gem engravers.

Going through a number of these plants which sometimes look a little old fashioned in comparison with the new and modern American lapidary outfits, one might get the idea that such installations could never succeed in making the most wonderful jewelry out of the various raw materials. But still we know that this old branch of German industry is very well respected all over the world for precision and accurate work.

If you ever have the opportunity to travel to Germany, don't forget to visit Idar-Oberstein. The mineral collector as well as the lapidary will find here most interesting things.

NOVICE COLUMN

In the Sept.-Oct. 1953 R & M, Gordon ViGurio, 2231 Pine St., Bakersfield, Calif. suggested that a Novice Column be opened for rank beginners in mineral collecting. These amateurs, who do not know one mineral from another, may submit their names to the Novice Column.

It is our hope that collectors having duplicates may donate a few specimens to one or more novices who are expected to acknowledge receipt of specimens received and to reimburse each sender for postage paid on the packages. Please print or write plainly the names and localities of all specimens sent novices, and if 2 or more minerals appear on the same specimen, identify each. Remember the novices do not know one mineral from another, so please be as helpful as you can.

The following is the fifth list of novice collectors.

Richard Queirolo, 9 Edgewater Rd., Belvedere, Calif.

Frank A. Cabral, P. O. Box 93, White Pines, Calif.

E. G. Benedict, P. O. Box 49128, V. A. Branch, Los Angeles 25, Calif.

William Fisher, D.D.S., 155 Orange Street, New Haven, Conn.

Curtis A. Jackson, 4848 Crescent St. N. W., Washington 16, D. C.

Raymond F. Miller, 324 Spring St., Galena, Illinois (11 yrs. old).

James Michael Fulton, 1527 Morgan St., Keokuk, Iowa, (9 yrs. old).

Mrs. R. S. White, 17 St. Catherine St., Madawaska, Me.

Alan K. Warner, 1129-1st St., S. W., Grand Rapids, Minn.

Peter Boyle, 425 N. Division St., Peekskill, N. Y. (12 yrs. old).

Janet Frances Cameron, 25 Magerus St., Huntington Sta., L. I., N. Y. (8 yrs. old).

Mr. Aloysius J. Gruss, 11309 St. Mark Ave., Cleveland, Ohio.

Karen L. Brooke, 3650 Burton Ave., Toledo 12, Ohio.

Paul Eberts, 4220 W. 16th St., Little Rock, Ark.

Robert Carlson, 335 Wyandotte St. Bethlehem, Pa.

Arthur E. Carlson, 335 Wyandotte St. Bethlehem, Pa.

Roger R. Roth, 1322 Walnut St., Allentown, Pa.

Ken MacLeod, Thetford Mines, Quebec, Canada.

Tyrus Wilson, 1208 Christian St., Harrisburg, Pa.

MINERAL SHOPPER'S GUIDE

Conducted by CHARLES A. THOMAS
706 Church Street, Royersford, Pa.
Advertisers are invited to send notes or samples of their products. This service is free.

Quite a few out-of-state cars are to be seen on our highway. As they pass us or drive in front of us, we look for mineral society stickers or wonder if they could possibly be mineral collectors. Perhaps we should advertise our interest in the hobby a bit more. We know of one collector who uses the trains from a suburban point to a big city and rarely fails to carry a copy of Rocks and Minerals prominently in view at all times. This, of course, helps to advertise the magazine, but the general idea is to advertise the hobby, meet other interested people and perhaps, in some way, to help the cause of mineral collecting.

Rocks and Minerals Magazine is also a good guide to take along on an extensive trip or a list of dealers names and addresses could be made by consulting old and new copies. By all means, visit the dealers and collectors. It is generally conceeded that such visits pay-off in more ways than one and add so much to the enjoyment of your trip.

We would like to repeat, for the benefit of those who have lapidary grinding problems, that the new Lapidabrade grinding wheels which may now be obtained from C. C. Hamilton and Sons, at 2153 Chestnut Avenue, Ardmore, Pa., are made especially for the lapidary and can be brought in "C" and "D" type wheels for medium to hard stones. We are using 80 grit, 120, 220 and 320 in "C" and "D" types and doubt if we will ever go back to the soft or hard wheels which we so haphazardly acquired about a year ago. Either the "C" or "D" wheels do a swell job on such stones as tough jasper and agate. We have tried a piece of pink corundum and find no difficulty in shaping this material, nor do we find undue wear on the wheel; at least no deep grooves which would be so difficult to true up. If you have grinding problems, by all means, get in touch with Mr. C. C. Hamilton.

Mr. H. F. Bretthauer, of Moorestown, N. J., has a display of N. J. stones in his home, all of which, Mr. Bretthauer cut and polished by hand. The stones, collected in Camden and Burlington Counties, N. J., present most unusual color combinations and ideal patterns. Nearly one hundred and fifty of these beauties are on display in the N. J. State Museum, Trenton. Chert, agates, jaspers and many others are very beautiful.

Most collectors have not realized just what can be found in river and streambeds. We have a dozen or so beauties which we found in excavations along the Schuylkill River, near Pottstown, Pa., some from the French Creek (in midstream) and others from other streams. One of the prettiest of blue crocidolites was taken from a North Jersey stream by Leonard Morgan a few years ago. Howard Ennis of Wilkesbarre, went into a stream near Goodville, Pa., a few weeks ago, and after some minutes (with the aid of a water-mask and oxygen tank) came up with a nice quartz boulder with a point in a cavity. Point of order, says he.

Walter H. Wright (Adobe Crafters) hit a pocket in an old mine near Santa Fe., N. Mex., some months ago and came out with many valuable specimens of Japanese quartz groups. Jap quartz crystals are unusual in that they are flat and twinned in pairs at the base and at right angles; are found only in Japan and possibly in Alaska. Adobe Crafters still have some excellent groups for sale.

Waskey again: Before leaving for the Grande North, Frank sent in two more fossil teeth. One appears to be a manganese soaked front weedpuller of an ancient carabou and the other may be

a seal-gripper of a polar bear . . . very ancient and fossil.

The Wall Street Journal states that Ultra Violet Products, Inc. of South Pasadena, California, manufacturers of the famous Mineralight and other U.V. products, has acquired all outstanding stock of the Vogel Luminescence Corp. of San Francisco. The manufacture of fluorescent inks and paints and phosphorescent substances will be continued under the supervision of the Luminescence division of Ultra Violet Products, Inc. at the new property in San Francisco. Aside from the fact that the Mineralight is one of the products so well liked and in demand by the mineral collecting fraternity, we feel that the continued successes of this firm must be attributed to Thomas S. Warren's friendliness and all-out cooperation with the individual collector and his societies. Perhaps the greatest achievement of Ultra Violet Products, Inc., lies in the fact that hundreds of thousands of dollars worth of ore have been discovered with their S12537 and other short wave lamps made in their factory and many thousands of tons of ore are being sorted each year with equipment bearing their name. Discoveries of our own, which were made with a V44 portable lamp (short wave) made it possible for us to buy the later models in the S1 series and the Blak-Ray lamps.

Joel Shappiro, of Washington, D. C., sent us a perfect and beautiful specimen of apophyllite on sea-green prehnite collected at the famous Bull Run, Virginia locality. Sol, father of Joel, states sadly, that this locality is fast becoming but a memory and that, due to vandalism, the quarry is closed to collectors. We most certainly appreciate having this lovely specimen for our display.

As if to coincide with Mr. K. E. Gibbons fine article on millerite, we received from Ford Wilson, another batch of interesting micros including some of the famous Keokuk, Iowa, calcite with millerite inclusions. Some excellent gold micros and other rarer western specimens were placed into our best one hundred group.

Speaking of micros, we found a cluster of exquisite egg cases of a peculiar worm, the name of which escapes us, but the prefix is 'Marg', and the tiny perfect spheres of pearly pink mineral-like eggs had us guessing for a few minutes. Note, Mrs. Gibbons, we did not save this for a mount.

If you want a nice crystal of Corundum from So. Africa, send a buck to the Natural Gem and Mineral Company, 13 Morey St., Attleboro, Mass., and receive a fine single, a pair or three, whichever you wish.

If your vacation travels take you to El Paso, Texas, and you visit dealers there stop in to see the Mexican Agates and Amethysts at the Gorman Agate Shop, 713 Santa Barbara, El Paso.

Mr. Howard Pate, of Beach Place, Branford, Connecticut, member of the New Haven Mineral Club and Rocks and Minerals Association, has opened a shop which will deal strictly with fluorescence; lamps, materials, minerals, micros, shadow-box sets with built-in lamps, and all kindred fluorescence and luminescence subject matter including ink, gravels, label kits, books, bulk minerals for fireplaces for indoor or outdoor application, triboluminescence, thermoluminescence, from world localtities and supply sources. It goes without saying, that such a venture fills a long felt need in the east. Filters will be available (Corning) to fit custom and special lamps. Watch the ads under the heading of Fluorescent House.

The petrified grapevine has it that there are 1200 pounds of rare new and rare oldtime specimens from Franklin and Ogdensburg, N. J., available at the low rate of $1.00 per pound which will go to whoever may come for them. The collection will not be split. Interested dealers or collectors should get in touch with this department.

Some of you will get to South Dakota, this summer. We hope that you will not miss stopping in at the Scott Rose Quartz Company, 1020 Custer Ave., in Custer, S. D. You will see fine cutting material and super specimens.

'Leave No Stone Unturned' should be the motto of all earth science hobbyists. We urge New York City dwellers and

visitors to accept the hospitality of the Brazilian Government Trade Bureau, 551 Fifth Ave., N. Y. City, N. Y., and learn about this friendly country's progress and view the beautiful mineral specimens on display. One will see ore and gem materials which we have been mentioning in this department, from time to time. Last, but not least, please note the Good Will, which will be in evidence at this delightful exposition.

The Old Prospector, Howard J. Hewitt tells us that he has some nice autunite, beryl and other minerals from his own diggin's. When he is not proving up pay dirt at the New Milford, Conn., mine, he may be contacted at 142 Carroll St., Paterson, N. J. Specimens run from $1.00 and up.

More than a few faceting machine manufacturers are stocking the new book, Elementary Faceting Instructions, by Edward J. Soukup, G. G., which retails at $2.50 per copy, post paid. After reading this easily understood book, our conclusion is that it is the one book all faceters should have whether beginners or old hands. The advanced lapidary will recognize the pitfalls which caused bad work in his own early attempts. The beginner cannot help but profit by Mr. Soukup's step by step proceedures and warnings and following his easy instructions should result in fine workmanship after four or five practice pieces are tried. We like the nontechnical style of writing which is still scientific enough to satisfy the otherwise technical mind. The one great fault with most science writers, is their propensity for plunging immediately into technical jargon which so very few readers understand, merely to show what YOU should know and 'SEE WHAT I KNOW'. Soukup's book is simply and delightfully written. Discounts to dealers are very attractive; write to Mr. C. H. Tucker, Chairman of Publication Sales, Box 801, San Diego 12, California.

On a trip to Southern Maryland a few weeks ago, we passed through a rather pretty valley in the Nottingham, Conowingo, Oxford, Pa., region. It was raining cats and dogs, buckets and sheets, or we might have been able to report on a little digging in the Chrome belt area in this section of Pennsylvania and Maryland. A sign on a lawn near Martic, invited visitors to stop and look. What to look at was very obvious. Mr. Flory, whose hobby is collecting huge grindstones, had placed them all in a beautifully arranged pattern along the walks and lawn of his home. The history of each 'wheel' was nicely printed on varnished wood signs. We never knew that there were so many different kinds, from so many parts of the world. Yes, Mr. Flory does own a truck.

Is El Paso becoming a gem center of the U. S. A.? We note that Manual Ontiveros is offering fine Mexican agate at 612 East Arizona, El Paso, Texas.

If you contemplate a visit to our National Museum in Washington, D. C., to have a quick look at the gems and minerals, have yourself another guess. It will take at least six hours to see the first and second floor exhibits.

We note (please read carefully if you like color in minerals) that Hugh A. Ford, of 110 Wall Street, N. Y. City, had listed, among many other fine minerals, a nice specimen of zaratite. This is, or was known as, emerald nickel. It is not found in many world localities . . . had been found at Texas, Pa., and at an old locality in West Nottingham, Chester County, Pa. The buying collector must usually wait for old collections to show up in dealers' shops. The North Museum in Lancaster, Pa., has a superb specimen of this beautiful green mineral. Please pay this modern museum (opened new last October) a visit if you can possibly do so . . . and investigate the Ford specimen which we know is underpriced.

As time goes on, some state's localities actually become barren; others, quite new, crop up through road-building excavations and new quarry operations. The above mentioned zaratite might still be found if the dumps at Texas, Pa., Woods Chrome Mine are diligently pried into. We hear, by the petrified grapevine, that the aporhyolite locality near Greenstone, Pa., is rapidly becoming barren of good chunks of this fascinating copper-bearing rock which is

prized by the lapidary. However, we feel that there are still a few tons of good material left, but not as easily picked up on the surface as before. The more aged a locality becomes, the more one must rely on extra effort and deeper digging. It is much easier and far less expensive to send an order to a dealer. We do not deny the thrill which comes with uncovering a nice field specimen, but there are some types which just will not be found again without extreme effort and luck.

Ben Birchall, now living at Medford Lakes, N. J., is making crystal models with Lucite plastic. They are not haphazard affairs, but painstakingly machined exact on specially built saws and grinding machines built by Ben. We note that he uses the Gude crystal sketches from which he duplicates the parts he so expertly glues together with solvents and plastic-solution cement. The finished models are proved exact by fitting in prepared forms.

Fossil collectors should investigate prices in the lists of the Paleontological Research Laboratories, Box 331, Statesville, N. C. Send for their list. Nine Cephalopods were presented in the March-April issue.

Many types of magnifiers can be seen being used on field trips. Even a Sherlock Holmes 'Big Round' may be of some eye aid and is better than nothing. We have just received from Edmunds Scientific Corporation, an unmounted Hastings type Triplet in 10X, and about 15 mm in diameter. It sells for $3.75. It was no great trick to mount this in a stainless steel holder with handle. A piece of brass or copper tubing will also do very well, and a handle is not exactly needed. We believe we will use this ten power lens assembly exclusively since it is easier to focus without too much direct sunlight needed. Color correction is also a feature of the Hastings type Triplet. Collectors, who do not yet own a good magnifier, should send for one of these lenses without delay and save from six to ten dollars. The address is: Edmund Scientific Corporation, 101 Gloucester, Pike, Barrington, N. J.

Those who might be more than a little interested in Paleobotany, should get in touch with this department if they need a chunk of interesting chalcedony type Buhrstone, from Paris, France. This material shows casts of stems, seeds, pods and leaves of the Chara plant. The pod casts look so much like crustacea, that they have been incorrectly identified as such. There are many wholly replaced seeds and some of these are small enough for good micromounts. The availability of this material is just a service and can be obtained by any means short of outright swindle. Write direct to our address and make a deal.

Frank Hankins, of Collegeville, Pa., just came back from another trip. He visited dealer Cal Gettings, in Toledo, Ohio, and came up with some nice Scotch zeolites and Ohio fluorite and celestite. One huge celestite group is a museum piece of matchless beauty.

The Monadnock Mineral Shop sent us three nice pieces of chalcopyrite from the old Elizabeth Mine in Strafford, Vermont. The solid and near solid pieces show rough crystallization and in varied brassy colors, which sell at .25, .35, and .45 each. In the late eighteenth century, old settlers processed the sulphide by unknown methods, using birch wood on which crystals formed and used them for dye. The Monadnock Mineral Shop is in or near Marlboro, N. H.

An idea for long field trips!

Editor R & M:

Please renew my subscription to ROCKS AND MINERALS. This is the beginning of my twelth year as a subscriber & I wouldn't think of missing a copy, for ROCKS AND MINERALS is the best magazine I have seen yet. The material is precious.

I read each issue from cover to cover, with a red pencil under-lining articles I will need for trips, then on the outside of each copy I write the name of the state to which the article refers.

When ready to make one of our yearly trips looking for minerals, all I have to do is quickly glance at the cover of each magazine and take out the ones marked with the state we wish to visit. It works like a charm.

Violet C. Wheeler
939 N. Pleasant
Royal Oak, Mich.

May 18, 1954

FOSSIL DEPARTMENT

Conducted by A. ALLEN GRAFFHAM

Box 419, Ardmore, Oklahoma

This month I received a box containing a loose fossil and a fossil in matrix from Mr. C. F. Shepherd of Lompoc, California. These are apparently bryozoans, of a very interesting type. They are built up of concentric layers of cells over some foreign object. In the case of the two examples on hand, one was growing around a gastropod and the other an object of undetermined origin. The locality for these fossils is reported by Mr. Shepherd as follows:

"I found this formation in the lower south west part of San Luis Obispo County along the side of Highway 101, just north of the town of Santa Maria, Calif. This formation lies on the side of a low hill. I would judge the elevation to be around 100 feet above sea level. The hill itself is not all composed of this type of formation, but it is scattered in large masses. The largest I would say, would equal about 30 cubic feet", (Editor's note: Mr. Shepherd here refers to the limestone which contains the fossils.)

From Mr. J. J. Hoppinger of Lakewood, Ohio, we received the following list of collecting localities and number of fossils collected by him in 1953.

From the adjacent counties near Cleveland, Ohio, I have found the following:

500 Starfish from the L. Mississippian. These are Brittlestars about the size of a 50c piece.

1 starfish — a stelleroid — about the same size and locality as above. (Editor's Note: fossil starfish from any age are among the very rarest of the fossil forms. It is interesting to hear of this wonderful find.)

1800 trilobites — mostly parts. From these separate localities in the Mississippian These are new species.

A series of Blastoids from the same area and age. These are new to Ohio and to the Mississippian, and were first reported from the Ordovician.

A series of Blastoids from same locality as above. This form previously reported from the Miss. of Great Britain. New to North America.

A series of Blastoids of the genus *Codaster*. Not previously reported from Ohio.

A series of *Calthospongia* from the Miss. of Ohio. New species and new to Ohio. These are fossil glass sponges.

A group of *Hydnoceras*—glass sponges from the Mouth of Rocky River, Cuyahoga County, in the sandy member of the Chagrin Shales. Upper Devonian. Also associated slabs have "Belly" prints of a serostome (Eurypterid). Other sponges were collected in 1921 by J. E. Hyde from the Chagrin Fm. at Euclid Creek. More recent discoveries of sponges. were found at Euclid Creek Park in December 1952, by Dr. Chas. Bacon, the mineralogist from Case Tech. His fauna is allied to the above fauna of Hyde and Hoppinger.

Parts of a new species of trilobite found at Silica Quarries, Silica, Ohio. Middle Devonian — Silica Shale. These specimens are of *Proetus* of *whitei*. The only other specimen in existence belongs to the University of Michigan.

Series of Giant Trilobite tails — *Odontochile* (up to 4" across) Middle Devonian Limestone of Sandusky Bay Area of Ohio. Also found fossil fish plates, teeth, and scales at this locality.

From Columbiana County — from the Lower Mercer Ls., West Point, Ohio. A bed of *Pseudorthoceras knoxense*. Pottsville group — Penn. in age. These are small straight cephalopods about 5 inches in length.

Mahoning County — Poverty Run Ls. A series of Sea Urchins *Archaeocidaris* and crinoid remains. Penn. in age.

From Lisbon, Ohio, Columbiana County. A new Ganoid Fish *Haplolepis sp.* from shales above coal seams. new species.

A piece of Ordovician Limestone containing *Calymene* and *Proetus.* This rock contains over 100 pieces of these trilobites. This was washed in on Clifton beach, Lakewood, Cuyahoga County, Ohio.

Spring collecting has been fairly good in Oklahoma, although I have not been able to take to the field as often as I would like. One of our local collecting localities is quite famous with collectors near and far. This is Rock Crossing on Hickory Creek, which is located in the Criner Hills of Carter County, Oklahoma. The outcrop here is of Ordovician age and both the Bromide and Viola limestone are exposed. Downstream a short distance there are other exposures of Silurian and Devonian but the collecting here is quite poor. The Viola carries a few graptolites at this exposure, mainly *Climacagraptus.* The Bromide is the main fossil bearing horizon, and it is here that most collectors spend a very profitable hour or day collecting. This outcrop is quite famous for trilobites. Those commonly encountered are *Isotelus, Encrinurus, Loxodomas* as complete carapaces and *Eoharpes* as cephalons only. *Cerarus* and *Calliops* are the rare forms which are occasionally found complete, although there are other more rare forms present which are only rarely found as fragments and once in a generation found as complete trilobites.

The crinoids *Archaeoorinus* and *Hybocrinus* are most commonly found at Rock Crossing with *Porocrinus* being the rare form. Two specimens of the cystoid *Pleurocystites* and one of *Glyptocystites* have been found to date.

Brachiopods are not too common at Rock Crossing in comparison to other Ordovician localities such as those in Ohio, but are represented by a number of interesting forms. The most beautiful brachiopod is probably *Hesperorthis* and one of the less commonly encountered. There are a few clay lensed completely filled with the small brachiopod *Sowerbeyella.* The outcrop here is composed of alternate thin layers of lime and shale, and it is in the shale layers that the most beautiful brachiopods are found.

There are a few poorly preserved pelecypods and gastropods. The sponge-like fossil *Receptaculites* is occasionally found, along with an occasional fragmentary straight cephalopod.

The trilobites are usually found lying flat on either the top or bottom of the limestone slabs, although an occasional completely enrolled form is found free in the shale. The crinoids are usually found in the shale lenses and usually wash free.

The matrix of lime which sometimes partially covers some of the fossils is easily cleaned with small dental tools, and it is of such a nature that slabs can be readily sawed with a hack saw where it is advisable to trim out a fossil.

To get to Rock Crossing it is advisable to start north from the highway 77A turn off to Lake Murray Lodge at the intersection of Highway 77. This is about 6 miles south of Ardmore, Oklahoma. From the intersection one drives north to the first road going west or about one-fourth mile. Taking this gravel road west one passes an abandoned quarry on the left at about one mile. This is in the Woodford shale and is unfossiliferous. Traveling on west past a farmhouse on the left and then around a couple of curves brings the driver into the valley of Hickory Creek. Cross the bridge and park. The best outcrop for fossils is the high bank about 500 feet below the bridge and just to the left of the road. Good hunting.

A grand journal!

Editor R & M:

A grand Journal and a contribution to happiness of the people! You will never know what joy your fine publication brings to thousands of folks.

N. J. Busby
P. O. Box 77
Melrose Highlands 77,
Mass.

June 26, 1954

THE SAND COLLECTOR

Conducted by PETER ZODAC, Peekskill, N. Y.

Items on Interesting Sands Wanted. — Please Send Them In.

Chalcedony sand from Tucson, Ariz.

This is a medium grained light reddish-brown sand consisting mainly of gray chalcedony with white and brownish quartz, gray feldspar, black magnetite, black biotite, and grayish limestone. Donated by Dr. H. W. Kuhm, 4718 W. Lisbon Ave., Milwaukee 10, Wisc.

"From Saguaro National Monument, Ricon Mountains, Tucson, Pima County, Arizona."—on label.

Sand from most S. W. point of U. S.

From the most southwesterly point of the United States, we have a sand sample that was sent us by Chas. S. Knowlton, 143 N. Acacia, Fullerton, Calif. It is a gray, medium grained sand consisting chiefly of quartz (chiefly colorless, transparent, plus brown, also smoky) with black lustrous hornblende (flat grains), and black lustrous magnetite (round grains), some green epidote, red garnet, and white to pinkish sea shells. The beach is on the Pacific Ocean, about 4 miles west of San Ysidro, San Diego Co., Calif.

"As you already have sand from Bailey's Mistake, the most easterly beach in the United States, I wonder if some sand from the most southwesterly point of the United States might not be of interest to you.

"I attended the Show of the Calif. Federation and the American Federation in San Diego, Calif., on Sat. July 18th, (1953), I drove about 18 miles to the actual corner of the country. There is a small navy air field that occupies the actual corner, but the Officer of the Day gave me permission to drive as far as was safe, which I did. Then I had to walk a bit over a quarter of a mile to the boundary fence. As far as one can see there is black sand, many thousands of tons of it.

"I stood with my back to the ocean where I could look up the boundary fence with my right foot in Mexico and the left in California, I scooped a small shovel full from Mexico and then one from California until my tin can was full.

"Some of these days I hope to have sands from each of the extreme points of the U. S. and the outlying possessions. Long before I started to collect garnet sand I had sands from some of these points without really attempting to collect them."—letter dated July 22, 1953, from Mr. Knowlton. (Letter got mislaid or it would have been printed long before this).

Beach sand from Pacific Grove. Calif.

Pacific Grove, in Monterey Co., Calif., is on the Pacific Ocean. From its beach we have a sand sample that was sent in by M. M. Smith, 746 Cypress St., Monterey, Calif. It is a coarse, buff colored sand consisting entirely of quartz (smoky, brownish, milky) and feldspar (white, grayish, brownish). Some of the feldspar are good xls of white orthoclase.

"Sand from Pacific Grove Beach, famous for marine life studies." — on label.

Beach sand from Clearwater, Fla.

Clearwater in Pinellas Co., Fla., is on the Gulf of Mexico. From the beach in Clearwater we have a sand sample that was collected by Carl J. Dapper, 146 Henderson St., Old Forge, Pa. This is a fine grained gray sand consisting chiefly of colorless quartz with some white sea shells.

Creek sand from Pekin, Ill.

This is a medium grained brown sand consisting chiefly of quartz (smoky, brownish, white, clear) with some white feldspar and black magnetite (some of the magnetite is embedded in quartz). Donated by R. W. Nutting, 35 Forrest Drive, Pekin, Ill.

"From Flood Creek, NO. Pekin, Tazewell Co., Ill."—on label.

River sand from Farmington, Iowa

From the Des Moines River, near Farmington, Van Buren Co., Iowa, we have a sand sample that was sent us by E. N. Smith (Geode Industries), New London, Iowa.

This is a medium grained brownish sand. It consists chiefly of quartz (colorless, brownish, smoky; black basanite; gray to red chalcedony; deep red carnelian; brown cherty jasper), with some pinkish feldspar, brown limonite, black biotite; silvery muscovite; green epidote; black to rusty magnetite. The sand contains also many large fragments of black bituminous coal which show no roundness and hence could not have traveled far (there are coal mines in the district, Mr. Smith informs us).

Quartz sand from Ballantine, Mont.

From a gravel pit south of Ballantine, Yellowstone Co., Mont., we have a sand sample that was sent in by Ray D. Stratton, Worden, Mont.

This is a grayish, medium grained sand consisting almost entirely of quartz (chiefly colorless, but smoky, brownish, reddish also present), plus a tiny amount of black magnetite. This is an attractive sand consisting chiefly of clean, colorless, nicely rounded quartz.

Quartz sand from Roses Well, Nev.

Some few months ago we received a number of sand samples from P. O. Drury, P. O. Box 1028, Las Vegas, Nev. One of the samples came from a roadside wash on U. S. 95 at Roses Well (between Beatty and Las Vegas), Lincoln Co., Nev.

This is a dark gray medium grained sand consisting of smoky quartz coated by gray clay. Some black magnetite is also present.

Quartz sand from Camden Co., N. J.

A number of sand samples and minerals have been received from Herman F. Bretthauer, 401 S. Washington Ave., Moorestown, N. J., who collected them in Russell Ward's Sand and Gravel Pits on Pennsauken Creek, Camden Co., N.J. One of the samples is a medium grained yellow sand that is all quartz but stained brown by limonite.

"This is the common yellow sand of the deposit which grades up to very coarse unassorted mixture which includes specimens of agate, jasper, flint, and fossils of mid-Paleozoic age."—letter from Mr. Bretthauer, dated Feb. 2, 1954. A section of a road map on which the pits were located (about a mile east of the Delaware River, was also sent us). We do appreciate these maps!

Sanidine sand from Reserve, N. Mex.

One of our good friends, subscriber and advertiser, was David P. Record, Mgr. of Mission Curio Mart, 4400 Mission Road, Route 3, Box 384, Tuscon, Ariz. He had sent us many mineral specimens and sand samples but he will send us no more from now on as he lost his life in an auto accident on May 25, 1954. One of his last sand samples was a sanidine sand from Reserve, Catron Co., N. Mex.

This is a coarse gray sand consisting almost entirely of glassy colorless sanidine some of which have a bluish opalescence (the bluish opalescence is increased when the grains are immersed in water). Most of the grains are squarish in shape and also show crystal faces. Some dark gray to black lava grains also present.

"Five years ago we found this sand in an ant hill in a wash near Reserve, New Mexico."—on label.

Garnet sand from Hamlin Beach S. P., N. Y.

In the extreme N. W. corner of Monroe County, N. Y., is Hamlin Beach State Park on Lake Ontario. From the beach we have a sand sample that was sent in by Erik Hans Krause, 5 Castle Park, Rochester 20, N. Y.

This is a dark red medium grained sand. It consists chiefly of garnet (pink to red, gemmy; also opaque dark red that is almost black) and quartz (colorless, some brown). Another mineral that is common is black lustrous magnetite. A few grains of green epidote also present.

Beach sand from Selkirk, N. Y.

On the eastern shore of Lake Ontario is Selkirk, a little town in Oswego County, N. Y. We have a sand sample from there that was sent in by George W. Henes, 208 Tamarack St., Liverpool, N. Y.

"Under separate cover I am mailing you a sample of Lake Ontario beach sand from near the lighthouse at Selkirk, New York. It isn't anything very special but I thought you might like it".—wrote Mr. Henes.

This is a fine grained gray sand. It consists of quartz (colorless, brownish), garnet (pink to red), black lustrous magnetite, and some greenish epidote.

Limonite sand from Hiddenite, N. C.

Last summer Robert L. Cox, 228 Elk Creek Ave., Girard, Pa., was down in North Carolina on a collecting trip. One of the localities visited was the old emerald mine behind the school at Hiddenite, Alexander Co., N. C. From the creek which runs thru the mine he collected a sand sample for us. This is a reddish-brown medium grained sand. It consists chiefly of reddish-brown limonite and smoky quartz; some pinkish feldspar, black magnetite and whitish muscovite also present.

Garnet sand from Johnson's Fork Creek, Ohio

From Johnson's Fork Creek, near Harrison, Hamilton Co., Ohio, we have a sand sample that was sent in by Clyde C. Campbell, 705 Harrison Ave., Harrison, Ohio. This sand is said to contain gold but we could not spot any in the sample sent us.

It is a fine grained dark red sand consisting chiefly of pink to red garnet with some green epidote, dark brown limonite, lustrous black magnetite, brownish pyrite and colorless quartz.

Red sand from Norman, Okla.

Glen E. Kiser, Douglass, Kans., sent us a sand sample that comes from a sand deposit located 6 miles east of Norman, Cleveland Co., Okla. (this is one of the localities where the famous barite roses are found). This is a fine grained reddish-brown sand consisting entirely of quartz stained red by reddish clay.

Ilmenite sand from Tinton, S. D.

From Tinton, Lawrence Co., S. D. we have a sand sample that was sent in by S. T. Parke, Sterling, N. D. This is a coarse black sand consisting chiefly of ilmenite (black grains and small plates) with smoky quartz, pink garnet, black magnetite, and brownish monazite.

Hematite sand from Stone Point, Texas

Stone Point is in Van Zandt County, Texas. From this locality we have a sand sample that was sent in by Mrs. Ruby Renfro, 2901 Bomar Ave., Fort Worth 3, Texas. It is a reddish-brown medium grained sand consisting of reddish-brown hematite, smoky quartz, and a few flakes of silvery muscovite.

"We collected this sand from a cut in the road on highway 243, about a mile east of Stone Point; this is west of the town of Canton, Texas"—on label.

Halite sand from Wendover, Utah

Wendover, a small settlement in Tooele County, Utah, is on the Nevada border. From this area we have a sample of halite sand (common salt) that was sent in by Ford E. Wilson, 2924 Mountain Ave., El Paso, Texas. It is a medium grained sand and all halite (chiefly white, some colorless) and in rounded grains.

"Halite sand. Collected June 10, 1954 alongside Highway U. S. 40, about 15 miles east of Wendover, Utah. This is in the midst of a 200 square mile crystalline salt area (Bonneville salt beds). Winds picked up grains from the salt beds and deposit them in dunes. Although of relatively shallow depths, these are true dunes, with ripple-marked surfaces and other dune characteristics. The sand is snow-white, and composed of crystalline grains of nearly pure halite."—letter dated June 21, 1954, from Mr. Wilson.

Magnetite sand from Terry Andrae S. P., Wisc.

Terry Andrae State Parke is in Sheboygan County, Wisc. (on Lake Michigan and south of the city of Sheboygan). From the park we have a sand sample that was sent in by Dr. H. W. Kuhm, 4718 W. Lisbon Ave., Milwaukee 10, Wisc. This is a medium grained lustrous black sand consisting entirely of black magnetite.

"Magnetite sand from beach sand on Lake Michigan, Terry Andrae S. P., Wisc."—on label.

Pyrite sand from Matuwok River, Alaska

"Sending you a sample of pannings from Matuwok River, which drains to

Togiak Bay, about 30 miles westerly from the mouth of the Togiak River. The mouth of Togiak River is in latitude 59°, about 70 miles west of Dillingham."—letter received some months ago from Frank H. Waskey, Dillingham, Alaska.

This is a coarse, brassy and brown sand consisting largely of brassy pyrite and dark brown limonite and limonitic stained quartz with a very small amount of black magnetite. The pyrite does not show any roundness but is in rough pieces.

Rock flour sand from Kenora, Ont., Canada

Ben Sarlund, Finland, Ont., Canada, sent us a sample of an unusual sand. It is an extremely fine grained gray sand that feels like flour. It consists of colorless quartz and a little black magnetite.

"Glacial rock flour sand from layer between clay and gravel cut on highway 70, about 12 miles south of Rushing River, Kenora District, Ontario, Canada."—on label.

Garnet sand from Ceylon

From the Pelmadulla gem pit at Ratnapura, Ceylon, we have an interesting sand sample that was sent in by Capt. George Wm. Owens, 7500 Ellington Dr., Aero Vista, El Paso, Texas.

This is a coarse reddish sand. It consists chiefly of red garnet, with minor amounts of purple amethyst, black magnetite, smoky and brown quartz, light to dark blue sapphire, brownish topaz, and pale brownish zircon which fluoresces orange under the Mineralight.

"The sand was collected by my friend, S. J. Squires of Brisbane, Australia," so Capt. Owens informs us.

Beach sand from Manta, Ecuador

Manta, Ecuador, is on the Pacific Ocean. From the beach of this city we have a sand sample that was sent in by Rev. Wm. J. Frazer, 625 Main St., Moosic 7, Pa. (Rev. Frazer is now in Scotland on an exchange of pulpits with a Scottish Minister).

The sample is a very fine grained dark gray sand. It consists of colorless and brownish quartz, black lustrous magnetite, red garnet, green olivine, and some grayish sea shells.

"Collected by F. J. Roseney, President Lions Club, Manta, Ecuador."—on label.

Beach sand from Rarotonga Island

The Cook Islands are a group of small islands in the S. Pacific belonging to New Zealand. Their total area is 199 sq. miles and they were discovered by Capt. James Cook, a famous English navigator, in 1778. Rarotonga is one of the chief islands of the group.

From a beach on Rarotonga Island we have a sand sample that was sent in by Miss Winifred H. Arnold, 2020 Magnolia Ave., Long Beach 6, Calif. This is a medium grained brown sand. It consists chiefly of brownish sea shells and brownish coral, with a tiny amount of black magnetite.

"The sample was given me by a New Zealand aviator. He collected it in 1951."—note from Miss Arnold.

Beach sand from St. Cyrus, Scotland

St. Cyrus, in Kincardineshire, Scotland, is a little seaport on the North Sea. From the beach at St. Cyrus we have a sand sample that was sent in by Sandy Ramsay, 1015 Aikenhead Road, Kings Park, Glasgow S4, Scotland.

The sample is a fine grained reddish-brown sand. It consists chiefly of pinkish garnet, colorless and brown quartz, green epidote, and black lustrous magnetite.

Glass sand from Cape Flats, So. Africa

This is a gray, medium grained sand consisting entirely of rounded milky quartz grains. It was donated by John S. Albanese, P. O. Box 221, Union, N. J.

"From farm Manenberg, Cape Flats, Western Province, Union of South Africa. Used for glass manufacture; 99.5% silica, balance alumina, iron."—on label.

Augite sand from Spain

Juan Montal, Plaza Sgdo. Corazon 1, Villafranca del Panades, Spain, sent in this sample which is a dark grayish black coarse sand. It consists chiefly of black augite (some are lustrous black xls) with a tiny amount of smoky quartz. The locality is Volcan Puig Subia, Gerona Province, Spain.

"I send you a small sample of sand from North Spain volcanic area. Most

of it is augite xls near microscopic size. I collected it on the volcano slope in Nov. 1953."—on label.

Beach sand from Jomfruland Island, Norway

"Jomfruland is a strange island. It is a mile long (Norwegian mile) and 500 meters broad. It is quite flat and is made up of nothing but boulders of all size ground smooth by the sea. On the inside of the island is nothing but sand."—letter from Mrs. W. Hasselgren, Reginsvagen 6, Bromma, Sweden, who sent in a sample of sand from the beach.

The sample is a dark gray coarse sand. It consists chiefly of quartz (colorless, smoky, some reddish), with minor amounts of black biotite, greenish epidote, black magnetite, and whitish muscovite. Some broken sea shells (chiefly white, with some bluish) are also present.

Jomfruland is about 6 miles due east of the city of Kragero. The island lies in the Skagerrak, the channel which separates Norway from Denmark.

BARRON COUNTY, WISC., PIPESTONE QUARRY

By J. A. HELLAND
1115 Soo Blvd., Rice Lake, Wisconsin

I have lived in Barron County 38 years. I have always been interested in the outdoors and nature. The past 20 years I have been in Public Welfare work in Barron County. Therefore, I have had a good opportunity to know the County and also talk to people who have lived in Barron County many years. I had to retire last fall and will have more time to spend with my hobbies, the foremost of which are rocks.

There is only one place in Barron County where Catlanite has been found. This is the old Indian Quarry which is located 6 miles east of the City of Rice Lake, in the Town of Doyle. I think most of the people in the County have heard about this quarry but very few know where it is.

Starting about 4 miles east of Rice Lake and extending eastward into Rusk County are the remains of an old Mountain Range. The Glacier passed over our County. Just to the south of this area about 80 acres which the Glacier did not pass over. Quote . . .Prof. Bean, Dean of University of Wisconsin Geology Department. However, I have found one, if not two other places, that the Glacier must have been stopped and passed around. One of these is the hill where the Catlanite is found. This range of hills is about 8 miles long and from one to four miles across. Most of this territory is not inhabited. There are a few roads that cross it in the south end, otherwise there are no roads going across. This region is so stony (Glacial drifts) and rough that it cannot be farmed. I have found non-glaciated volcanic cinders (Pyroclastic) in these hills. (Identified by Prof. Cooper of Hamline University, St. Paul, Minn.)

I do not know of any Catlanite deposits in Chippewa County. That part of Barron County where the Quarry is located was formed from part of Chippewa County, in 1860. Therefore, it may be this same Quarry.

The Quarry is located on the summit of one of the highest points of this range. I have looked for outcropping along the edges of the hill but have been unable to find any. There, however, are outcroppings of a red flagstone which can also be found on top of the hill. I have heard that the University of Wisconsin many years ago did do some digging there and that another party from Illinois also did some digging. Therefore, it is not now the way the Indians left it.

The hole in the ground as it now is is about 6' wide and 20' long running on a decline to 10' deep. The Catlanite is at this 10' level. I don't know how deep the layer of Catlanite is. It seems to run at a little incline so that it may have been above ground where the Indians first started to dig. Overlying the Catlanite is about 2 feet of a rather crumbly red rock and above that it 8 feet of a very hard red sandstone which I don't think the Indians could have removed, but which I think has been dynamited by the White Men.

Last fall I found a place about 10 feet from the Quarry where I think the Indians (the story is that only a few Indians knew the location of the Quarry) made their pipes. I dug down through 12 inches of small broken pieces of Catlanite and flagstone. I think they used the flagstone to cut and shape their pipes as it breaks easily with square edges. There are no small or glaciated pebbles around this hill. However, while digging there last fall amongst these chips I found a round stone ¾" in diameter similar to those found along Lake Superior which, no doubt, was left there by the Indians.

Barron County Pipestone Quarry could be the same Quarry mentioned by Henry W. Longfellow in "The Song of Hiawatha". It is pretty well established that Mr. Longfellow had never visited the Lake Superior Territory where the plot for Hiawatha is laid and that he got his information about that area and also the songs, customs, etc. of the Indians from Mr. & Mrs. Henry Rowe Schoolcraft.

In 1831, Schoolcraft, then Indian Agent at Mackinaw, was ordered with Lieut. Clary and some forty men, to explore the region South of the St. Croix River. On August 6th they found the trading post at Lake Chetek burned. Mr. Draper who wrote this article in 1880 states that Schoolcraft and his men were at the Trading Post at Rice Lake, 12 miles North of Chetek. This Trading Post had burned. Both these Trading Posts were owned by John Jacob Astor (American Fur Co.) with headquarters in Prairie du Chien and Mackinaw Islands. Schoolcraft was within 6 or 18 miles from the Quarry. He was a Geologist and therefore, must have been interested in this Quarry which he, no doubt, had heard about from the Indians with whom he was friendly.

Mrs. Schoolcraft was a daughter of Mr. Johnson, whose wife was the daughter of Waub-o-Jegg, Chief of the Chippewa Indians, North of the Chippewa River. Mr. Johnson was a Fur Trader with headquarters at St. Croix Falls. St. Croix Falls is only about 60 miles from the Quarry and no doubt Johnson knew of its location. His daughter, Mrs. Schoolcraft, no doubt had heard about it from both her parents and her grandparents. (While there was a Pipestone Quarry in Minnesota, this was Sioux Territory and these tribes were enemies.)

Mrs. Schoolcraft was educated in Ireland. She was a great help to Schoolcraft in translating the Chippewa language and also explaining the Indian customs, traditions, etc.

In 1842 Reverend Alfred Brunson was appointed Sub-agent for the Bad River band of Chippewa Indians of Lake Superior. He was to be stationed at La-Pointe, Madeline Island. Rev. Brunson, at the time of his appointment, was living at Prairie du Chein, Wisconsin. The usual mode of travel at that time was by boat & portages. Rev. Brunson and some miners, who wanted to investigate the Copper Mines by Lake Superior, decided they would join forces and travel by wagon. This was the first such travel across Northern Wisconsin.

The first point mentioned by Rev. Brunson in his narrative North of the Falls of Chippewa (Chippewa Falls) was the Pipestone Quarry. From the description of the lakes and terraine he mentioned this was the Barron County Quarry. It seems, therefore at one time it was a familiar place or landmark.

This information gathered from old books and writings seems to show conclusively that the Barron County Quarry is the one referred to in the "Song of Hiawatha" by Henry W. Longfellow.

Editor's Note. Catlanite is a red clay formerly used by the Indians for making pipes. It is also known as Indian pipestone.

A Micro-Mount Enthusiast!

Editor R & M:

Glad to see the micro-column in the late R & M. My collection numbers 615 mounts in one year already. Gets better every day too. I spend sometime nearly a whole day working with my 'scope. Just wish I knew more answers.

Mrs. R. G. Hays
Buffalo Rd., Rt. 1
Des Moines, Iowa

May 9, 1954

Editor's Note: Mrs. Hays had a very nice write-up in her local paper of Feb. 4, 1954, describing her minerals and illustrated with two photos-.

Club and Society Notes

Attention Secretaries—Please submit neat copies. Give dates and places of meetings. Check names for correct spelling.

East

Mineralogical Society of Pennsylvania Annual Meeting at Blue Ball, Pennsylvania

One hundred and sixty members and friends of M. S. P. attended the field trip and annual meeting at Showalter's Quarry in Blue Ball, Lancaster County, Pa.

During the election presided over by founder, ex-president, Leonard J. Duersmith, Dr. Arthur Hopkins, president and Gene Belz, vice-president were re-elected. Dr. Richard Foose was elected to a four year term as a member of the executive board.

John C. Showalter was again the perfect host, furnishing cookies, cigars, chocolate and white milk and ice cream in huge quantities.

The highlight of the day was the presentation of a new Estwing hammer and a scroll to host, Showalter, in recognition of his hospitable treatment of the Society and all collectors.

Members from as far west as Erie and northeastern Pennsylvania attended.

Charles Thomas of *Mineral Shoppers Guide* will be sporting a good coat of tan. Harold Evans our official photographer was very busy with his camera. Lulah Ranck our official registrar got everyone to register with her usual display of red headed charm. Jim Irvine was there doing his usual good job with the

Annual meeting of the Mineralogical Society of Pennsylvania in Showalter's Quarry, Blue Ball, Penn.

Junior Members. Walter Bancroft our capable treasurer was mighty busy trying to collect dues, selling emblems, signing new members and smoking his pipe all at the same time. Marvin Brubaker our Blue Ball specialist saw to it that everyone satisfied his mineral wants. Eugene Orner with his usual luck found some fine purple Fluorite.

The minerals found were: pink Dolomite, purple Fluorite, Pyrite Xls., Chalcopyrite Xls., Quartz Xls., and Rutile.

As always the meeting was a friendly success.

"Plum Point Field Trip"

This year's trip to the Calvert Cliffs was again a most enjoyable and successful affair, embracing as it did an opportunity for a party of 50 to collect Miocene fossils and sharks teeth at various localities along the 25 mile area of the cliffs.

We met at Plum Point and after a picnic lunch and some collecting we went on to Kenwood Beach for as fine and profuse a Miocene Fauna as can be found anywhere in this section of the United States; the Choptunk and Calvert formations yielding an unlimited supply of fossils.

Late in the afternoon we motored down to Solomons, Maryland, for a good dinner at Bowen's Inn, after which we met at the Chesapeake Biological Laboratories for the evening meeting. The Biologist, Mr. Scheltema, our host, gave us an interesting talk on the activities of the laboratories and then Mr. John Parker of the Academy of Natural Sciences of Philadelphia gave one of his highly interesting and instructive lectures, illustrated by colored moving pictures. His presentation and wit were sparkling and the curiosity and enthusiasm aroused were well indicated by the length of time required to respond to the innumerable questions from the audience.

No organized trips were arranged for the next morning thus affording an opportunity for smaller groups to go wherever they chose. There was good collecting at Scientist Cliff exposures and those at Camp Roosevelt, visits to which were made posible by the kind efforts of Dr. Davidson. However, the abundance and diversity of species nowhere equalled those at Kenwood Beach.

Perfect weather, beautiful country and good fellowship contributed no end to the pleasure of the trip.

Dr. Arthur H. Hopkins,
President
741 Beacom Lane, Merion,
Pennsylvania

Progress and Accomplishments

Junior member, Douglas Smith, recently won a first prize blue ribbon for his mineral collection in a hobby show at Lancaster, Pennsylvania.

Gerry and Will Shulman's article, *The "How-To" of Mineral Collecting*, beautifully illustrated with photographs by Harold Evans, was published in the June Issue of the NATIONAL RECREATION MAGAZINE.

Samuel Gordon's classic, THE MINERALS OF PENNSYLVANIA, is being reprinted by the Society. C. C. Hamilton of 2153 Chestnut Avenue, Ardmore, Pennsylvania, is chairman of the publishing committee.

It recently came to light that many members cannot attend all field trips because of their children and Sunday School attendance records. To remedy the situation a Bible Class with a qualified teacher will be held and attendance noted. Martha Hopkins will meet with the group and conduct the class.

Gerry & Will Shulman,
Co-chairmen
Publicity Committee
113 Huntington Terrace
Newark 8, N. J.

New York Mineralogical Club, Inc. March 17, 1954, Meeting

The regular March meeting was held at Schermerhorn Hall, Columbia University, New York City, 75 members attended.

President Dr. Stenbuck called for order at 8:03 P.M.

The reading of the minutes of the February meeting was dispensed with to provide extra time for the program.

The nominating committee reported the slate selected for officer's election as follows:

Mr. Stenbuck for President
Mr. H. Allen Mitchell for 1st Vice- Pres.
Mr. Curt Segeler for 2nd Vice-President
Mr. Victor Pribil for Secretary
Mr. Fred Hayden for Treasurer
Mr. Frederick H. Pough for Director
Mr. Neal Yedlin for Director

All canditates are present incumbents.

Mr. Mitchell displayed museum quality specimens of Wulfenite from Los Lamentos, Chihauhua, Mexico; and skyscraper type Quartz xl group from Pala, California and gave a short resume.

The speaker of the evening was Col. John J. Livingston, Corps of Eng., U. S. Army, who lectured on the History, Geology and the Minerals of Korea, illustrated profusely with remarkably excellent color slides. His lecture was not only most interesting but much was learned of the Tungsten and other strategic minerals found in this little known country.

Col. Livingston was well applauded and plied with many questions by the members in the period following.

Mr. Joe Rothstein brought in a lot of free specimens for distribution.

Adjournment came at 10:07 P.M.

Victor Pribil, Secretary
47-18 37th Street
Long Island City 1, N. Y.

New Jersey Mineralogical Society, Inc.

We meet at the Plainfield Public Library, Plainfield, N. J., the first Tuesday of the month from September to May.

Each month we have a well-known Speaker on topics pertaining to Mineralogy, most times accompanied by slides.

The February Lapidary Symposium attracted over 125 people. Spheres, slabs, cabachons and jewelry were shown in the Society's new Display Cabinets.

A Micro-Mount Group was formed in March and very active since.

At the regular April Meeting, Neil Wintringham exhibited part of his Maine Mineral Collection. A group of 20 Members are taking part in a Field Trip to the Oxford County Region in July to collect.

The April Field Trip was to the Dumps of the Royal Green Marble Company, Phillipsburg, N. J. Among the minerals collected was an Apatite Xl, pale green opaque, 1½" long and ¼" diameter, fully terminated in dolomite matrix. At the dumps of the C. K. Williams Co., Easton, Pa., serpentine was collected. We were fortunate in having Mr. John H. Bertrand II, of the Mineralogical Society of Pennsylvania assist us in identification

The following Officers were elected at the May Meeting:

Theodore Newitts, President; Cornelius Verburg, Vice-President; Herman Carter, Vice-President; Mrs. Alexander Knoll, Secretary; and Mrs. Carl Bieling, Treasurer.

The May Field Trip was to French Creek Iron Mine Dumps, St. Peters, Pa. Among minerals collected was Chalcodite — the outstanding mineral at this location. It is a Chlorite, iron silicate, the specie Stilpnomelane, variety Chalcodite. Brassy micacious in weathered pink Feldspar matrix. Also, Sphalerite Xl — 1", and Lodestone were found. Splendid Micro-Mount specimens of Magnetite Xls were collected.

The Annual Dinner in June was held at the Park Hotel, Plainfield, N. J., June 1st, 1954.

Dr. C. E. Morell, associated with the Standard Oil Development Company spoke on "The Glamour Metals". The retiring President, Mr. Stewart C. Fulton, was presented with a Plaque in appreciation of his untiring efforts for the Society.

Amanda Knoll
532 Edgar Road
Westfield, N. J.

The Geological Section—Buffalo Society of Natural Sciences

The Geological Section meets on the first Friday evening of each month from September to May at the Buffalo Museum of Science. All persons, whether residents or visitors to the Buffalo, N. Y. area, are always welcome.

March 5, 1954 was the night set aside for the Annual Sale of Geological Material. Many excellent specimens of Minerals, rough and polished gem material, and fossils were offered for sale by various members. Trading was vigorous and there can be no doubt that this was the most successful sale in the Section's long history.

Copper Minerals was the subject of the Kodachrome illustrated talk presented by Mr. and Mrs. David E. Jensen of the Rochester Academy of Science on May 7, 1954. Mr. Jensen is Head of the Geology Department at Ward's Natural Science Establishment in Rochester, New York. The excellent color pictures of Copper Minerals were made by Mrs. Jensen. The slide program was concluded with a series of pictures entitled *Monkey Business* showing the work of Mr. Leo Houlihan of the Rochester Academy of Science in cutting spheres from minerals and making stands for them by the lost wax process. A large display of copper minerals and other specimens from Ward's Stock was on hand and since the material was for sale mny members returned home from the meeting with fine additions to their collections.

The results of an election of officers held by mail ballot prior to the meeting was announced as follows:

Dr. Wilbur L. Hoff, President; Mr. W. A. Scotchmer, Vice-President; Mr. Clifford J. Awald, Secretary; and Dr. Henry E. Stadlinger, Treasurer.

Field Trips:

Several Field trips are planned for the summer months. The first of these was held on Saturday May 8, 1954 to the Rock Dumps of the New Canadian Hydroelectric Station at Niagara Falls, Ont. Led by Mr. W. A. Scotchmer, a full day of collecting was enjoyed by the 15 persons who attended the trip.

Clifford J. Awald, Secretary
The Geological Section
Buffalo Museum of Science
Buffalo 11, New York

Lapidary & Gem Society of N. Y. Swap Your Programs

A program swapping convention was held at the Hotel Paris in New York City on June 12, 1954, which was attended by the New York City and Northern New Jersey Clubs affiliated with the Eastern Federation of Mineral Clubs. The event was the brain child of the Lapidary & Gem Society of N. Y. which issued the invitations and acted as host. Ideas were swapped and the headaches of program chairmen were aired. Each club is going to list those of its members, topic and availability, who have given programs in their own club and are willing to stage one for another group. The lists will be consolidated and circulated as a master list.

In the discussion each program chairman also obtained leads on other sources of programming such as manufacturers, movies, etc. Clubs attending were the North Jersey Mineralogical Society, the Newark Mineralogical Society, the Rockland County Mineral & Gem Society, the Newark Lapidary Club, the New

York Mineralogical Society, and the Lapidary & Gem Society of N. Y., the sponsor. Mr. Martin Walters of the Lapidary & Gem Society of N. Y. acted as host and took care of the arrangements and refreshments. A report of this unique event will be given at the Eastern Federation Convention at Miami, Florida in October.

Joe Roth[illegible]ein, Sec.
255 W. 84th St.
New York 24, N. Y.

South

Southern Appalachian Mineral Society

On Saturday, April 10, 1954, some thirty to thirty-five members of the Southern Appalachian Mineral Society made a trip to Gaston County, North Carolina, just west and south of the town of Bessimer City. First we visited Little Mountain Mine (Devil's Workshop) where nice specimens of goethite (botryoidal, mammillary, pisolitic, reniform, etc.) were found.

Next we visited the properties of the Lithium Corporation of America now being core-drilled and soon to be mined. We went to a small "test-hole" on Long Creek where the ore had been removed from a hole some ten by twelve by five feet deep. Many nice light yellow-green blades of spodumene were found in decomposed feldspar and quartz. Then I cracked a piece of the matrix rock which split right through a small (½ x ¼ in.) dark green crystal. Immediately I thought of hiddenite. No further check was made until last Saturday. At that time I took the specimens to the North Carolina State College Minerals Research Laboratory in Asheville where they were examined by Mr. Mason K. Banks, superintendent of the laboratory. Having looked at the crystal under the microscope, Mr. Banks suggested that is was either hiddenite or beryl, most likely the latter. With a pair of tweezers I removed a small portion of the crystal which was placed in a beaker of heavy liquid (in which beryl floats). The particle immediately sank. So, from its deep color and its specific gravity both of us are convinced that it is true hiddenite. And if it is, as far as I know it is the first from this locality.

An interesting beryl deposit has been opened up in Rutherford County, North Carolina. I have cut from it eight aquamarines and deep golden beryls which are very beautiful. Will be glad to get detailed information and send to R & M if readers are interested.

Carl G. Mauney
Box 176
Avondale, N. C.

Mid-West

Akron Mineral Society

The Akron Mineral Society held the Annual Rock, Mineral and Gem Exhibit, April 28 to May 9, at the Akron Museum of Natural History.

The exhibit was viewed by over 10,000 and well received.

On June 20, we went on a trip to Flint Ridge where some fine polishing material is obtainable. Here, the Indians from all over the eastern half of the United States obtained fine arrow point material.

On the return trip home, we visit Baughman's park located near Routes 16 and 586. Here there are a number of statues hewn from sandstone by an aged stone mason who did this as a hobby. There are several life size statues of presidents, busts of an Indian and several unnamed men and a woman, also a crouching lion and a deer with antlers.

H. C. Treese, Pub. Sec.
1895 Manchester Rd.
Akron 14, Ohio

Central Illinois Rockhounds

The June meeting of the Central Illinois Rockhounds was held Sunday June 6th 1954 at the Y.W.C.A. 436 N. Main Street, Decatur, Illinois. This was a lecture meeting with colored slides on Mexico by Miss Helen Brundage.

I want to thank each and every Officer, Exhibitor, Member and all Friends who helped make our Second Exhibit a great success. We had over 1,100 guests present, an increase of 400 over last year. Our guests said they were surprised and delighted with the size and beauty of our displays and the friendliness of the Members. Two members of Chicago Clubs, each said that if the combined three Clubs of Chicago would attempt to have an Exhibit, it would not compare with ours. Quite a compliment! Wait until next year when our Exhibit will be even better.

George M. Davis, President
141 E. Main St.
Decatur, Ill.

Chicago Rocks and Minerals Society

On the evening of June 12th, the Chicago Rocks and Mineral Society was entertained by Anita Sky Eyes, a professional international lecturer and entertainer. An American Indian with "sky blue" eyes, hence her name, entitled her program, "Stop Being Afraid and Live Longer" an expression of Indian philosophy in regard to the rapid pace of our present civilization. Her lively song in her native tongue thrilled the audience as well as her display of her Soo dress, valued at $1000.00 silver craft and turquoise jewelry.

The evening was a farewell party for Herbert and Oriol Grand-Girard, who are moving to Santa Fe, N. Mex. Both Grand-Girards are well known in mineralogical and lapidary circles.

Shawnee Geology & Rockhound Club

On April 4th some 40 members of the Topeka, Kansas, Shawnee Geology and Rockhound Club, with some of the people from the neighboring club at Emporia, spend an enjoyable field trip and picnic at Ottawa, Kansas.

The trip was occasioned by an invitation from Mr. A. C. Carpenter of that city to partake of the three interesting courses in rockology, he has made famous in that area. First, Ross quarry on the southeast corner of Ottawa, second, the laminated beds of sandstone with the underlying Lawrence shale, which is located about a mile southwest of Ottawa along highway 50S and third, the fine rock, mineral, and fossil collection Mr. Carpenter has in his home and which he is always happy to show to those interested rock hobbyists.

Mr. Carpenter is the dean of rock collectors in Kansas and never tires of talking rocks; just where he gets the extra energy to do all the things he does is beyond me and certainly speaks well of the value of this interesting hobby.

Getting back to the Ross quarry, which as some of you know is a fossiliferous limestone of Pennsylvanian age. In addition to the numerous fine fossils contained in this limestone, many of the larger fossils form a geode-like interior that in many cases are lined with finely preserved Calcite crystals, some of these show the hinge spirals in a beautiful iridescent crystal pattern in Calcite. It appears this iridescent coating is a film or secondary coating of Siderite on the Calcite. There are also large vugs in the limestone in which these strange crystals cover the walls; some of these crystals are beautifully etched with some acidious solution that one time was present.

Some of these pseudo-geodes or vugs contain a wide variety of minerals; in some instances primary Calcite dogtoothed crystals are coated with the iridescent Siderite and with small patches or groups of snow white Dolomite crystals with a sprinkling of tiny cubes of Pyrites and Marcasite crystals thereon; others with a secondary deposit of crystal clear rhombs of Calcite; others with delicate pink crystals of Barite. Some traces of the lead and zinc minerals, as well as small specimens of the copper minerals are also found.

In the sandstone and the underlying Lawrence shale mentioned above are found well preserved specimens of the plant life that flourished during the time the Coal Measures were laid down.

Remarkedly well preserved stem sections of the horse tail rushes, Calamites, and great fronds of the giant ferns are easily recognized but owing to their fragile nature are difficult to remove and maintain intact.

The day for this outing was near perfect and everyone was well repaid for their trip not only in new material collected but an opportunity to talk rocks with old and new found friends alike.

E. L. Banion
3716 Churchill Road
Topeka Kansas

West

Los Angeles Mineralogical Society

The Los Angeles Mineralogical Society, on June 17, held their last meeting before the summer recess. More than seventy members enjoyed a superb display of rare silver specimens from the mineral collection of their president, Dr. P. A. Foster. Most of the specimens were from Michigan some from the Daniel's collection. Some were from Mexico. Many had never before been exhibited.

Dr. Foster gave a brief talk on Silver. He told of its use in coins and ornament throughout the centuries and reminded us that it is often mentioned in the Bible. Abraham purchased a field as a burial place for Sarah with "four hundred sheckels of silver which he weighed out in the presence of witnesses." Silver ornaments, dating back to 2500 B.C. were found in ruins of Troy.

Silver is listed as Isometric. Dr. Foster said that he had studied mineral collections in many places here and abroad and had seen silver in many forms: as coarse and fine wire; in flakes, scales and sheets; arborescent, dendritic and fern shapes but never had he found silver in the form of a TRUE CUBE!

The L. A. M. S. plans, at future meetings, to have displays accompanied by informative talks research done by members. Suggested for study were lead, tin and molybdenite. In September, regular meetings will be resumed at the Premier Cafeteria at 6:30 P.M. on the third Thursday of each month.

Following the mineral discussion, pictures in color were projected on the screen and Dr. and Mrs. Foster shared with the society, in imagery, the trip they made in the spring of 1953 to England, Holland, France and Italy.

With an F3 Leica, he had obtained sharp, well balanced, professional looking pictures which showed such fine detail as the hands on the face of Big Ben in London, ruts pre served in the streets of Ancient Pompeii, and the exquisite colors of the famous Rose window in Notre Dame Cathedral. One photo, with filtered light falling on the faces of Holland children in a darkened doorway, looked like a framed Rembrandt. In another, ravens, carrying out the tradition of assured perpetuity for the Tower of London, danced among tiny daisies! One might have counted the petals.

Knowing that cameras are frowned upon in museums, no one expected to see Minerals. Some were surprised to see STONES so much in use: in palace or cottage, fortress or cathedral, Pavements or Campanile towers, in Roman walls and aqueducts, along the canals of Venice and the dikes of Holland. The camera brought beauty to share from the mystic circle of Stone-henge to a glowing blue sapphire cabachon, which was really sunlit sea viewed through the cave's darkness and shaped by its entrance, at the Grotto on the Isle of Capri.

Edith Donner
Acting Publicity Chairman
2112 Oak Glen Place
Los Angeles 39, Calif.

So. Calif. Mineral Identification Society

The Southern California Mineral Identification Society which was organized in November holds regular meetings at Compton Rock Shop the first and third Wednesday of the month.

The purpose of the club is to cultivate the spirit of friendship and good fellowship and promote the study of mineralogy.

Short business meetings are followed by informal discussion and identification of mineral specimens. Group and individual field trips are highlights of the activities.

Officers of the club are: Alfred E. Hawley, President; Ernest M. Featherston, Vice-President; and Marge Lemons, Secretary-Treasurer.

Marge Lemons
5941-A Cerritos Ave.
Long Beach 5, Calif.

Mineralogical Society of So. California, Inc.

At the May meeting of the Mineralogical Society of Southern California, Dr. Thane H. McCulloh, Professor of Geology at California Institute of Technology gave a talk on "Pre-Tertiary Geology of the Mojave Desert". He spoke principally of the Mesozoic era, tracing many of the sedimentary formations westward from the Grand Canyon region. Some excellent slides were shown to illustrate his points.

Mrs. Milton A. Wise
1162 Woodbury Road
Pasadena 6, Calif.

East Bay Mineral Society

Our banquet and installation took place June 10th. Our new President is Mr. C. L. Cole, owner of the famous Benitoite Mine in San Benito, California. Other officers are Vice President Dr. F. M. Yockey, Secty., Mrs. Dennis Patterson, Treasurers, Mr. and Mrs. O. R. Russell, Directors, Mr. Sidney Smyth, Mr. Frank Wilcox and Mr. Grant Howard.

Our Society this year at their banquet presented to all of their former presidents a lovely gold and silver Past President Pin. The presentations were made by Mr. Dafoe, President of the California Federation. At the same banquet, Life Membership Cards were presented to all of the Society's active Charter Members and these presentations were made by Mr. Orlin J. Bell. There were eight members to receive Life Membership Cards.

This summer will be a busy one for our club as we have field trips planned through the summer. As a rule we take July and August for a vacation time and do not have meetings or field trips. This year we will have field trips and our regular meetings will start again September 2nd.

We are looking forward to a fine year of accomplishment and good fellowship.

Betty Patterson, Secretary
The East Bay Mineral Society, Inc.
P. O. Box 1196
Oakland 4, Calif.

Del Norte Rockhounds, Inc.

On April 25th R. C. (Charlie) Gaines led 42 members and friends of the Del Norte Rockhounds, of Crescent City, California, on a field trip to the dredger tailings on Althouse Creek, Josephine County, Oregon. The cars met at Cave Junction, Ore., on U. S. Hiway 199 at 9:30 A.M., then drove 6 miles on the Oregon Caves road, then turned right toward Holland, Ore. Turned right again at Holland, and drove to the tailings on Althouse Creek.

After the hungry were fed, and the stragglers gathered to display their findings, Charlie proved to be quite popular as a conductor of field trips.

One of the most outstanding specimens shown, was found by Oscar Kamberg. It was a large boulder of mottled green and white Jadeite. Mr. Kamberg accompanied Charlie on his hike over the tailing piles and along the creek.

Many other specimens of Jadeite were found, and when opened up, may produce many fine settings. Jasper and Agate were also brought in. Herbert Kibler made several trips down the bank to wet a specimen of lovely Jasper. The writer envied Herb his find, as it was beautiful.

Jerry Weiler, an eleven year old rockhound, proudly showed a boulder of impure metamorphosed limestone, with a vug filled with bright, silver-white crystal Marcasite.

These present on the trip were:
Lenore Sondergard, our hard working President, and had it not been for freezing to the rockpile after seeing a harmless three foot snake, would have called the day perfect. Gertrude C. Penn, the best Secretary ever owned by a bunch of Rockhounds. R. C. (Charlie) Gaines, field trip Chairman Mr. and Mrs. Si Lubarsky; Si is Past President

and a hustler for the Club, well supported by his better half, Ivy.

Mr. and Mrs. Harry Knudsen, who was induced to make the trip by Si. Mr. and Mrs. John Weiler, and their daughter Jeanie and son Jerry, who found the Marcasite specimen. Mr. and Mrs. George Hughey. Mrs. Hughey seemed to be carrying all their loot, while George brought in the prospecting pick when they arrived for lunch. Mr. and Mrs. Herbert Kibler and their daughter Molly. Mr. Kibler brought a load of grub as well as extra passengers. The writer can vouch for the delicious food prepared by Maude F. Kibler, and distributed for the enjoyment of all who seemed to be hungry. Mr. and Mrs. Robert Binns, and their daughter Anna Marie. Mr. and Mrs. Lester Jones, and son Vincent; Vincent seemed to be more interested in Zoology than Mineralogy, for he brought in, and displayed several pockets full of frogs, and a double handful of tadpoles in different stages of maturity. Mr. and Mrs. Jesse Mills; Mr. and Mrs. Art Dennison; Mr. and Mrs. Chas. Smith; Mr. and Mrs. Howard Wolfe; Mrs. Esther Ruth Smith; Betty Hancock; Mr. and Mrs. Frank Presnell; A. U. Abbott; James Wilson; Mr. Manoa Follett; Miss Dolores McFarland; Oscar Kamberg; Betty Waller and Leonard Strickland of Eureka, and last, but not least for noise, that old bewhiskered rockhound, Wm (Bill) C. Chandler, who has the distinction of being the first President of the Del Norte Rockhounds.

This collection of names was secured through the tireless efforts of our Secretary, Gertrude C. Penn.

Wm. C. Chandler,
1465 Pacific Ave.
Crescent City, Calif.

Whittier Gem & Mineral Society

The Whittier Gem & Mineral Society take great pleasure in announcing there 5th annual show. Lapidary in Action on October 23 - 24 1954 in the Smith Memorial Hall.

Kenneth W. Tharp. Tres.
Whittier Gem and Mineral Society
Box 66
Whittier, California

Los Angeles Lapidary Society

Newly elected officers of The Los Angeles Lapidary Society for the coming year are: Howard Evans, president; Charles Cook, 1st vice-president, Robert Atwood, second vice-president; Jack Deurmeyer, treasurer; Margaret Seeley, recording secretary; Maxine Reams, corresponding secretary.

After the election of officers, Mrs. Jessie Chittenden gave a talk on jewelry design, illustrating her talk with jewelry made by the members.

Regular meetings of The Los Angeles Lapidary Society are held the first Monday of each month at 8:00 p.m. at the Van Ness Playground Auditorium, 5720 Second Avenue, Los Angeles. Meetings are open to anyone interested in lapidary work.

Nell Stein
Corresponding Secretary
6110 Rimpau Blvd.
Los Angeles 43, Calif.

Humboldt Gem and Mineral Society

First Annual 1954, Gem and Mineral Fair, Oct. 2nd and 3rd, 1954. Harris and J. Sts., Carson Mem. Bldg., Eureka, Calif.

Sponsored by the Humboldt Gem and Mineral Society. Beautiful lapidary and mineral displays, silverwork, fluorescent displays, Indian artifacts will be featured.

Dealers, snack bar, grab bags, raffles, demonstrations, prizes!

Admission free.

Packed with information!

Editor R & M:

I have just finished reading an old issue of R & M from the year 1951 which is the first I have ever seen of your magazine and without even finishing it I am enclosing $3.00 for a subscription. Your magazine is a very fine one and it is packed with the kind of information a person interested in rocks and minerals can read both for instruction and pleasure.

Richard D. Stanton
305-95th St.
Brooklyn 9, N. Y.

May 3, 1954

Wants to bet on R & M!

Editor R & M:

My copy of ROCKS AND MINERALS is at hand with the yearly blue slip reminding me that *that time* is at hand again; and I cheerfully enclose my check for a year's renewal.

Both my wife and I enjoy your publication greatly—also, apparently my friends do also, as my copy is usually somewhere else when I get ready to settle back for a good look at R & M.

My only regret is that R & M doesn't come monthly. I have for the last quite a few years been connected with the printing and publishing business in one way or another and I fully realize that suggestions such as this are much easier to think of than to accomplish . . . I for one, however, would gladly pay a higher subscription charge for a monthly R & M and I'll bet you a choice piece of Grafton Center uraninite against whatever occurs in Peekskill that there are plenty of others who would echo my thought on this.

Paul M. Tilden
Box 231
Warner, N. H.

May 3, 1954

Publications Recently Received

Pough—A Field Guide to Rocks & Minerals

By Frederick H. Pough, Consulting Mineralogist, 333 pages, 4-¾ x 7½, illustrated—$3.75. Published by Houghton Mifflin Company, Boston, Mass., 1953.

This fine book is recommended to anyone interested in the great outdoors and particularly to those who have a curiosity about the rocks they see around them. It is a welcome addition to the "Peterson Field Guide Series" edited by Roger Tory Peterson. In this volume, as in other books in the series, the size and contents have been specially adapted for use in the field.

Part I contains the basic information needed for the study of rocks and minerals. Chapters on where to find rocks and minerals, general physical properties, crystal classes, chemical groups and suggested identification proceedures are included here.

Part II describes all the common minerals and a few of the rare species. The description, for approximately 250 minerals, covers such items as environment, crystal description, physical properties, composition, tests, distinguishing characteristics and occurrence. For some minerals notes on interesting facts and economic importance are also given.

An outstanding feature of the book is the generous use of fine illustrations which include 256 photographs—72 superbly done in color. Line drawings of typical crystals, that appear on the pages opposite the photographs, are in themselves valuable items. End paper diagrams show a generalized map of major formations of North America and a schematic drawing that shows the association of minerals to the type of rock in which they occur. Included also is a glossary of geological terms used in this book and a bibliography with brief descriptions of each book cited.

H. V. Hamilton

AMERICA'S MOUNTAIN
Pikes Peak and the Pikes Peak Region

Here is a delightful little book written by one of our popular authors, Prof. Richard M. Pearl, Dept. of Geology, Colorado College, Colorado Springs, Colo. "America's Mountain" is an illustrated 30 page publication with an attractive gold and blue cover. A letter dated April 20, 1954, from Prof. Pearl gives us an interesting glimpse of the contents of his new book.

"I'm delighted to send you one of the first half-dozen copies of my new book, "America's Mountain, Pikes Peak and the Pikes Peak Region," and hope you will enjoy having it.

"Although Pikes Peak is one of the best-known mountains and travel attractions in the country, this is the first publication of its kind dealing with both the natural and human history, as well as the scenic attractions of the Pikes Peak Region. Minerals, rocks, and geology are included. My wife, as you will notice, has collaborated with me and has done the drawings.

"Any of your readers who may be interested can obtain the book for 50 cents postpaid from the Mineral Book Company, Box 185, Colorado Springs, Colo."

Ward's Earth Science Collection Manual

Ward's Natural Science Est., Inc., P. O. Box 24, Beechwood Sta., Rochester 9, N. Y., have just issued their new "Earth Science Collection Manual—MC 103", which has been prepared for home or classroom use in the study of earth science. This is a 22 page, 8½ x 11, illustrated publication and is such an interesting manual that it should have a wide circulation. Perhaps the best way to describe its text is to quote from the letter received from Henry L. Gresham, of the Establishment, and dated June 28, 1954.

"It is designed as a simplified introduction to the study of Earth Science, for either the home or classroom. It is specifically intended to be used with certain of our own mineral collections, referred to throughout the text, to enhance the educational value of these collections, and to convey more information than can be contained in a label-list. However, the manual may, of course, be readily adapted to the use of a teacher's own collection, or to other materials. The manual itself is to sell separately at $1.50 per copy."

Smithsonian Publication

Two Silicified Carboniferous Trilobites From West Texas, by Harry B. Whittington, 16 pp., 1 fig., 3 pls., published by The Smithsonian Institution, Washington 25, D. C., April 22, 1954.

Virginia Publication

Structural Framework and Mineral Resources of the Virginia Piedmont, by William R. Brown, 24 pages; 2 figs., 2 pls., published by Virginia Geological Survey, Charlottesville, Va.

Filer 1954 Catalog

J. C. Filer & Son, 1344 Highway 99, San Bernardino, Calif., have recently issued their 1954 catalog. This 42 page illustrated catalog is full of choice items on lapidary supplies, mineralights, books, minerals, and other items. Send for your copy today!

Obituary Notices

MRS. EDNA M. SCOTT

Mrs. Edna M. Scott, of Custer, S. D., who was well known for her famous rose quartz mine, died Sun. April 4, 1954. She was 87 years old. For many years she had sponsored the South Dakota Mining Day Picnic at her rose quartz mine.

Mrs. Scott was born in Atlantic, Iowa, in 1867. A pioneer in every meaning of the word, she had been a resident of the Black Hills of South Dakota since her arrival as a child of 10 in a wagon train. It might be of interest to point out that the Everly wagon, in that wagon train, was drawn, not by oxen, but by their milk cows.

Gold was the lodestone that drew the family to the Hills but it was rose quartz around which they were to center their activities. Even as a small child, Mrs. Scott was always interested in the many minerals and rocks of the Hills particularly rose quatz which she was later to commercialize and develop into a successful business. Their rose quartz mine, which is operated by her son, Frank Scott, is still the source of materials used in the manufacture of jewelry, lamps, ash trays and similar items.

Mrs. Scott arrived in Custer in June of 1877 with her parents and settled at Harney City, an early mining town, about two miles from the present site of Keystone. Her father, Mr. Everly had come to the Hills in 1876 and returned the following year to get his family in Franklin county, Nebr., where they had moved from the Iowa home. They drove a covered wagon, loaded with groceries and supplies and brought 8 milk cows along on their overland trip. Mrs. Scott's mother drove a pony team.

When they came here miners were rocking out gold at Harney City where her father was postmaster for two years until the town was discontinued and they moved to Rockerville where they lived for 11 years. It was at Rockerville that she met and married her husband and they moved to Rapid City where he helped in locating and plotting the town. In 1892 they came to Custer and her residence here has been continuous since that time except for the period of her final illness.

Surviving are three children, Frank Scott of Custer, George of Fort Scott, Colo., and a daughter, Mrs. Joseph Myler of Pasco, Wash. Her husband and a son, Charles, preceded her in death many years ago.

DAVID PALMER RECORD

David Palmer Record, age 35, of the Mission Curio Mart, Tucson, Ariz., was killed in an automobile accident on May 25, 1954. Mr. Record came to Tucson in 1946 for his health, and became interested in mineral collecting as a hobby. Later he became associated in business with his parents, Mr. and Mrs. Claude Motel, and in December 1952, the business occupied a new building constructed for that purpose. Many visitors admired the fine display and acclaimed it one of the best. The Mission Curio Mart will be closed for a time but open during the fall and winter.

MAGNUS VONSEN

Magnus Vonsen, president of the M. Vonsen Co., Petaluma, Calif., and well known in mineralogical circles, died on Wed. June 16, 1954. His very fine collection of minerals, said to be one of the best in the country, will go to the Academy of Sciences in San Francisco, Calif.

ISAAC S. SKILLIN

FREEPORT, Maine, May 28, 1954—Issac S. Skillin, 79, died today in a local nursing home after a long illness.

Husband of the late Bertha Pratt Skillin, Mr. Skillin lived on Cushing Ave. He was born at Walnut Hill, North Yarmouth, Dec. 8, 1874, son of Sumner and Elizabeth Gray Skillin and attended North Yarmouth schools.

A retired mineral dealer and lapidary who resided in Freeport 44 years, he was a charter member of the Maine Mineralogical and Geological Society of Portland.

Formerly, he manufactured paper boxes in Freeport, Richmond and Portland. As a hobby, he collected minerals. He later operated a mineral and antique store for a number of years in Freeport.

He is survived by a son, Edmund T., Freeport; a daughter, Mrs. Raymond D. Curtis, Portland; a sister, Mrs. Mable G. Kennedy, Portland; and three grandchildren.

GILMAN S. STANTON

Gilman Shattuck Stanton, eighty-two, former manufacturer of women's neckwear, died May 7, 1954, at his home, 245 W. 104th New York City. He was born in Arlington, Mass., and was graduated from City College. An amateur mineralogist he was at one time president of the Mineralogical Club, of New York, and a member of the Academy of Arts and Sciences. Surviving is wife, Mrs. Adelaide Stanton, and a brother, Frederick E. Stanton.